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A MANUAL

FOR

CHINA PAINTERS

BEING A PRACTICAL AND COMPREHENSIVE TREATISE ON THE ART OF PAINTING CHINA AND GLASS WITH MINERAL COLORS

BY

MRS. NICOLA DI RIENZI MONACHESI

BOSTON
LEE AND SHEPARD PUBLISHERS
10 MILK STREET
1897

"*Content if hence th' unlearn'd their wants may view,*
The learn'd reflect on what before they knew."

POPE.

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MANUAL FOR CHINA PAINTERS

C. J. PETERS & SON, TYPOGRAPHERS.

ROCKWELL & CHURCHILL, PRINTERS, BOSTON, U.S.A.

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PREFATORY

In issuing this *Manual* I claim nothing new as to either methods, materials, or manipulation; and, moreover, no superior knowledge on the subject.

Its sole merit must rest on its being the actual results of many years of observation and experience.

It would be deplorable if the results of my experiments and studies could benefit no one but myself, and I hope the suggestions which I here offer may prove of some value to others.

The book is especially designed for those who have had but little, if any, previous knowledge of the subject, but who desire practical information and reliable instruction; and in pointing out the common errors of the past, I have but made an effort to indicate how they may be avoided in the future. In short, I have endeavored to write such a book as I very distinctly remember wishing for when I began to paint on china.

MRS. N. DI R. MONACHESI.

PARIS, *May 15th, 1896.*

MADAME N. DI R. MONACHESI, —

I have just received in proof a part of the work which you have written, and which you propose to publish soon under the title of "A Manual for China-Painters."

I took great interest in it; and I must congratulate you sincerely, Madame, for the excellent idea you have of thus placing at the service of artists and amateurs the great experience and talent which have gained for you such just fame in the United States and Europe.

All who wish to devote themselves to painting on porcelain will find in your treatise a valuable and practical guide, that will facilitate a rapid study of this branch of the Ceramic Art.

I do not think that I can better testify the esteem that I have for your work than by instructing Messrs. Favor, Ruhl & Co. to push it actively. These gentlemen are my sole agents in the United States for the sale to artists and amateurs of my vitrifiable colors for designing and painting on china and glass.

Receive, Madame, etc., etc.

A. LACROIX, *Chemist.*
Chevalier of the Legion of Honor,
Officier d'Académie.

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Madame Ve A. Monachesi

J'ai reçu de lire en première épreuve une partie de l'ouvrage que vous avez écrit et que vous vous proposez de publier prochainement sous le titre de

« A Manual for China Painters »

J'y ai pris grand intérêt et je tiens à vous féliciter sincèrement, Madame, pour l'excellente idée que vous avez eue de mettre ainsi au service des Artistes et Amateurs la grande expérience et le talent qui vous ont valu une si juste renommée aux Etats-Unis et en Europe.

Tous ceux qui voudront s'adonner à la Peinture sur Porcelaine trouveront dans votre Traité un guide précieux et pratique leur facilitant l'étude rapide de cette branche de l'art céramique.

Je ne crois pas pouvoir mieux vous témoigner l'estime que j'ai pour votre œuvre qu'en m'engageant à la propager très activement. Messieurs Faber, Kuhl & Co qui sont mes seuls Agents aux Etats Unis pour la vente aux Artistes et aux Amateurs de mes Produits vitrifiables destinés au Dessin et à la Peinture sur Céramique et sur Verre.

Veuillez agréer, Madame, l'expression de mes sentiments distingués

A. Lacroix
Chimiste
Chevalier de la Légion d'Honneur Officier d'Académie

Juin 21 1896

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INTRODUCTION

In preparing this *Manual* on the use of mineral colors for amateurs and inexperienced decorators, I have been deeply impressed with the difficulties presented by a most unfortunate and complex feature connected with the art of china-painting, of which beginners justly complain; and that is the variety of names, labels, and styles of package, under which these colors too frequently masquerade.

Colors are readily procured in any desired quantity in the original powder form, and this may be very easily adulterated or otherwise manipulated by those who are willing to belittle their art by lowering it to a commercial level. To conserve individual interest by simply appropriating another's goods and claiming proprietorship is, to say the least, a questionable enterprise.

As there is nothing to prevent any person from emulating the example of these amateur color-makers, and the field is unlimited, no one can be positive where this practice will end. Too many

china-painters already have become irresponsible merchants, and developed an ambition to place on the market "my colors."

But this is not the most deplorable feature; one of the most common, in connection with these colors — which are manufactured by and obtained from an authentic source, and already have regularly recognized names — is to introduce them under a multiplicity of fictitious designations, which inevitably tends to mystify and embarrass the unsuspicious novice, ignorant of the practice of these methods.

Professional decorators could not be caught by such nonsense; therefore there is but one inducement — a most transparent one — in the effort to deceive the amateur, of whose ignorance and inexperience is taken an inexcusable advantage.

The market thus created is both local and limited; but to the uninitiated it certainly creates endless confusion, without conferring any corresponding advantages, except, indeed, to the speculative manipulator.

Therefore the advantage and importance of adopting a standard nomenclature for the amateur cannot be too strongly emphasized.

In looking for such a standard, every china-painter of experience must agree with me in selecting that of Lacroix of Paris; as unquestion-

ably he stands first and foremost in providing colors for the use of amateurs.

The mineral bases from which colors are made must of necessity be limited; and while there are different formulas for their preparation, there can be no monopoly of the original material, and therefore to invent new names does not signify new colors, only combinations ; and upon investigation it has been satisfactorily demonstrated that, in nearly every instance, Lacroix's colors have entered largely, if not wholly, into these combinations.

In other words, there can be no shade or tint produced anywhere or by any one that cannot be matched by Lacroix's colors.

The veriest tyro knows that the slightest admixture of yellow with green will produce a different shade ; but does this justify a rechristening ?

Personally, I have no interests to advance in making a protest against this erratic system of nomenclature ; and the conviction that any book upon the subject would be incomplete if these facts were withheld must be my justification. Believing that a *fac-simile* of the colors universally acknowledged to be standard would be of great value to the amateur, I determined, if it were possible, to show them under their standard names ; and with this view the plates herewith presented have been prepared.

When the feasibility of this scheme was suggested to M. Lacroix, he was quite in consonance with it, and consented to supply the necessary material. These colored papers, which are exact reproductions of his colors, were manufactured in Paris, many of them directly under M. Lacroix's personal supervision. In accepting this substantial aid, I desire to avail myself of this opportunity to acknowledge my appreciation and indebtedness for a co-operation which enables me to place before the reader plates showing his exact colors.

AMATEUR CHINA-PAINTING

The art of painting with mineral colors has acquired such universal popularity during the past few years, that it is now almost included in the curriculum of a liberal education.

For many years painting on china was chiefly confined to the professional decorator; and beyond this class there were but few persons whose inclination or ambition tempted them to make an effort.

It was a rare and unusual accomplishment, and principally indulged in by those who enjoyed exceptional advantages; and while their achievements were regarded with wonder and admiration, they themselves were considered as quite superior persons.

A few years has changed all that; and from being considered conspicuous, or in the minority, the exceptional one now is he or she who does not at least make an effort to paint on china.

As an art, it has met with unparalleled success, — in fact, phenomenal; and to-day every facility for its pursuit is within the reach of all.

Up to a few years ago the necessary materials and accessories were not readily obtainable. Colors could only be obtained with some difficulty, often as a special privilege.

Only the simplest forms of china could be procured, usually table-ware. Portable kilns for the studio had not been invented.

To-day every inducement is offered to pursue this beautiful art. New colors and combinations of colors are constantly being displayed; the variety of shapes, sizes, and styles of china to be had is simply bewildering; and artistic studies for their decoration are continually being reproduced, each one apparently better than the other, until the veriest tyro in art is irresistibly impelled to make an attempt, even though it be a feeble one, to paint on china.

Perhaps this may be attributed to the great Centennial Exposition held in Philadelphia in 1876, as that proved a stimulus in every branch of art. Especially did it afford an impetus to keramic arts.

To the efforts of M. Lacroix of Paris, however, is largely due the success to which china-painting has attained among amateurs; for he was the

pioneer in supplying materials for their use, especially colors, and in doing so bestowed a real benefit upon a large class of workers. The outgrowth of this has been that the amateur of to-day can become as well equipped to pursue this branch of art as the expert professional.

It is adopted alike, and with equal enthusiasm, as a pleasant pastime or a profitable profession; and as either its value cannot be overestimated.

The disciples of this charming art number many thousands. It is a favorite employment with the old, the young, the rich, and the poor, irrespective of sex; the idle enjoy it, and the busiest manage to find time to indulge in this fascinating occupation, with the inevitable result, that from the crude creations of the amateur of twenty years ago, china-painting has developed to a science of real artistic merit and of commercial value.

Inventive faculties are continually taxed to promote and perfect further possibilities and improvements; skilful and trained draughtsmen supply designs, and art journals devote space towards its advancement and encouragement. Societies of china-painters are formed with a view to excite and keep alive a renewed interest in the art and in each other. Competitive exhibitions are held to elevate the standard, and prizes are offered to

stimulate originality. Briefly, nothing has been neglected that could cherish this beautiful art in the present, and perpetuate it in the future, until to-day it assumes a place of almost national importance.

The would-be china-painter of fifteen or twenty years ago had many difficulties to contend with; a very imperfect knowledge of the nature of the materials and how to use them was the rule, not the exception. Consequently the incipient attempts were exceedingly immature, and not as a general thing successful, considered as works of art. Technical details and mechanical features had yet to be learned. Mineral colors were but very imperfectly comprehended; the nature of the wares, glazes, and firing still less; while the application of gold, enamels, etc., were not at all understood. These have all been learned through disappointing and repeated failures, and at the sacrifice of time, money, and labor, — the severest discipline by which any knowledge is acquired. The trite adage, "Experience is the best teacher," was never more apropos than when applied to china-painting.

In addition to these discouraging obstacles, there existed a very vague idea of the requirements of decorative art; and the designs — usually restricted to floral devices — were frequently incorrect in

drawing, crude in color, devoid of modelling, and lacking in perspective. And judging from specimens extant, a goodly proportion of them were the result of pure invention; and any one was tolerably free from all risk of breaking the second commandment in admiring them, for they were totally unlike anything "in the heavens above, the earth beneath, or the waters under the earth."

Aside from color, decorative or applied art is distinctively a separate branch, or rather a science in itself. A knowledge of it can be acquired theoretically, practically, and mechanically, as certain inviolable rules and regulations, involving elementary principles of art, govern its conception and construction.

Decoration is the composition of ornament, so that when applied to form it enhances its beauty and increases its value.

It should be in consonance with the object to which the decoration is applied; that is, it should be adapted to the shape, appropriate to the material, and should harmonize with the use to which it is ultimately to be put, — whether for utility or ornament, — and other general features should be considered. The object of decorative art is not the creation of a separate work, but the fulfilment of a definite purpose, chiefly to ornament something already in existence; therefore it should

be suited to the size, form, and character of the space it is to fill.

There is a wide difference between pictorial and applied art, and yet both may embellish or decorate a certain specified space or surface. Therefore, while all pictorial art may be applied (and rendered decorative under certain conditions), all applied art is by no means pictorial.

Purely conventional ornament is a representation of natural objects expressed by their most essential and prominent characteristics, and usually consists of a rather free rendering of flowers, foliage, fruit, and figures, idealizing the originals by a series of arbitrary lines and curves, successively arranged, according to the fancy of the artist. Ornament must signify or suggest something, otherwise it is vapid.

One of the most primitive of Grecian designs, where scroll succeeds scroll in an undulating line of beauty, had for its motive the rolling waves of the sea.

All conventional or geometrical ornament doubtless originated from natural forms; and different nations employed different objects, and with a well-defined intention. Thus the Egyptian style consists of hieroglyphics, winged globes or disks, scarabs, the lotus, the palm, etc. The ancient Gothic ornament adhered to a natural reproduc-

tion of the flora, combined with an imaginary rendering of the fauna, of the surrounding country. Arabian ornament has for its foundation various combinations of geometrical figures, hence the name arabesque. Human figures and animal forms were forbidden by their religion.

The Roman style is more floriated, and finds expression frequently in a central or culminating point, encircled by foliage, garlands, festoons, and arabesques.

In addition to the general or national characteristics, decoration has distinctive features not to be ignored.

Different epochs produced different styles of ornament; and to mix these up in a haphazard fashion betrays limited information on this subject, besides being meaningless and inartistic. That a person does not know any better is neither a good reason nor excuse for violating the sensibilities of those who do.

An extravagant use of scrolls and insignificant curves, and lines running criss-cross and in every conceivable direction, is not ornament; for ornament demands repose and symmetry. But a conglomeration of lines, curves, diapers, dots, lattice-work, and what not, mingling in hopeless confusion, is an excess of even the worst style of rococo ornament, and is not art.

Rococo is an exaggerated development in the evolution of the style in vogue at the time of Louis XV.; it was then called *rocaille.* To quote from a well-known authority,[1] "The general term rococo denotes anything that is heavy, ugly, and tasteless."

The art of painting china has too frequently been enveloped in mystery, and its progress obstructed by groundless fears. The tyro was embarrassed with the numerous and varied statements from assumed authorities that were often misleading and incorrect, with the inevitable result of leading him to regard the art as one of unparalleled and perpetual perplexities.

While the popularity of the art was still in its incipiency, many were beguiled into a lavish outlay of time, money, and labor, without receiving any commensurate compensation. This misfortune was, however, never due to the art itself, but could be, in nearly every instance, directly traced to its real source of mischief, — that of the ignorance and inexperience of its representatives or exponents.

A superficial knowledge and a limited experience are chiefly responsible for repeated failures.

But another and important factor that mitigates largely against a more popular comprehension of

[1] Adeline's "Art Dictionary."

the requirements of this art is the evident determination to withhold reliable information, even in exchange for monetary considerations.

There is not much difference in the issue, whether the misrepresented facts are due to ignorance or intention; neither is justifiable under any circumstances.

China-painting is not an occult science, and the sooner it is divested of all mystery and secrecy the better; and those who have acquired a familiarity and facility in the art should feel a moral sense of obligation, if not a material one, to impart fully and freely all they know to those who have not.

It would be impossible and useless to chronicle and refute all the misstatements made verbally and in print relative to china-painting; but it may be well to enumerate a few of the most preposterous ideas that have prevailed, in order to refute them, for they have been exploded long ago.

One of the most absurd and fallacious was that mineral colors *will not mix*. This positive statement was continuously reiterated, and its veracity remained unquestioned many years. Its importance was so permanently impressed, that it really obtains to-day to a more or less extent.

The beginner was so seriously cautioned against mixing grounding-colors with painting-colors, or

of accidentally substituting one for the other, that to disregard this advice was simply to invoke dire disaster. No valid reason was ever given for this precaution; but it was imperative, and any deviation was equivalent to some dreadful accident, explosion, spontaneous combustion, or something equally harrowing. To-day all the colors of the mineral palette are mixed with as much freedom as are those of oil or water.

Still another erroneous impression that has been exploited with equal persistency was that a steel palette knife was not to be used with certain colors, — that they would be ruined in consequence of contact; and, above all, the importance of rigorously excluding a steel knife from gold was strictly enforced.

If precautionary measures be adopted to prevent the steel knife from rusting, and to keep it clean, — immaculately so, — there is no reason it should not be used for every purpose. It is the oxidation of the steel that does the damage to gold and the gold colors, as well as blue, if the rust be allowed to accumulate, and become incorporated with the pure metal or color.

The preventive is cleanliness. Decorators who work in factories run no risks; for work means something serious to them, and they use invariably the regulation steel knife.

Another idea that found many adherents was that a knowledge of chemistry was a preliminary necessity. While a knowledge of the chemical constituents of the materials used, the bases of the colors, the formation and special properties of bodies and glazes, is unquestionably of great advantage and assistance, a familiarity with these formulas is not an actual requirement for artistic decoration of china. In reality, very few have any acquaintance with the analysis of the materials beyond the vague one comprised in the one word "mineral."

One other prevalent error was, and is, that the colors change very materially during the process of firing.

To a limited extent this is true. The uncertain element of fire must be taken into consideration; but in reality the most of the colors issue from the kiln with but slight variation in tint. In a short time the novice understands this, and can, with but little experience and observation, calculate to a nicety the exact degree of shade required, and need never be disappointed.

Unquestionably, there are ample opportunities for the humbug; and if the china-painter has a latent talent that way, there is a wide latitude for him in which to exercise it to the satisfaction of himself, but quite as surely to the detriment of his art.

There should exist no patent rights in the art of china-painting; and the true artist and lover of his work will never attempt to monopolize ways, means, or methods in attaining an end.

But there is no disguising the fact that chicanery does exist, and that information is reluctantly imparted, even for a stipulated price.

The foundation and fundamental principle of all art, pictorial or applied, is, beyond dispute, a knowledge of drawing; and without some training and practice no one can ever hope to become an artist. Some knowledge of drawing, therefore, is of vital importance to the china decorator, and it should be the preliminary step before the application of color; and the better and more accurate the drawing, the better and easier will be the subsequent work.

Yet, notwithstanding this is an acknowledged fact, it is too frequently ignored by the average amateur, who, upon various pretexts, excuses himself from the severe discipline rudimentary study involves, and essays to paint with but little, if any, previous preparation.

Keramic art, the oldest the world knows, deserves to be approached with greater veneration and respect. As an art, china-painting makes the same demands upon one's powers as any other art, and the same methods must be pursued to attain

success. The mind must be cultivated, creative faculties exercised, eyes educated, and the hand trained to obey the will; and in no other way can success be achieved.

True art finds no expression by indirect or vicarious methods; and perfunctory attempts are trivial, insincere, and worthless. Numerous illustrations abound where a manifest disregard of the very first principles of decoration is evident, and where china-painting has been indulged in with a reckless indifference, and in utter defiance to every requirement of art.

It is entirely due to these immature and futile efforts of gross ignorance, that never rise beyond the dead level of mediocrity, that the art of china-painting has sometimes been brought into disrepute. There exists no valid reason why the standard of the china-painter should not be elevated to the highest point of excellence, and its results favorably compare with the most meritorious and finest works of art.

To accomplish this, the very first desideratum is learning to draw; and any one can learn to draw who can learn to write. Nature is the best teacher, and furnishes the best models.

There is no royal road to learn any art, trade, science, or profession; and those who have achieved proficiency, with corresponding fame and fortune,

have done so only through their own exertions and industry, and frequently at considerable sacrifice to personal convenience.

Even under the most favorable circumstances, with inherent talent and exceptional advantages of tuition, unqualified success is only attained after many weary years of honest endeavor and a well-directed, sustained effort.

It is a very grave mistake to suppose that any one can learn to paint china successfully, skilfully, and professionally in a given number of lessons, or become an expert in any specified time. China-painting cannot be picked up at random, like the latest pattern in patchwork; nor can it be evolved from any esoteric source, by the exercise of some cabalistic signs. Those who "know it all" in ten lessons can hardly be depended upon to elevate the art, or to give instruction to others. As in every other work worth achieving, much depends on natural capacity and cultivated observation, together with the amount of time and labor bestowed in serious study. One's environment and associations enter largely into the element of ultimate success; for undoubtedly one's surroundings exercise a potent influence in the development of artistic intuitions. It is an art, however, well worth any amount of time and attention conferred, and abundantly repays the efforts it entails.

But there are many who do not regard china-decorating at all seriously, but esteem it chiefly as an amusement, and manifest an evident desire to paint china without any preliminary course of study. Various reasons are assigned. Perhaps neither time nor means are at their disposal; or there may be a lack of inclination to pursue what would inevitably prove uninteresting and irksome if it involved any extra exertion.

Among this class may be included the thoughtless creatures who inquire if they "can take Cupids," much the same as if china-painting were something contagious, like the measles, and with about equal solicitude.

They but little realize the value of china-painting as an art. They neither possess, nor desire to cultivate, the special qualifications of the artist; and their efforts, not being serious, are of necessity limited. Yet if clever, ambitious, and industrious, it is entirely within the limits of the possibilities to acquire a superficial idea of the requirements of art, together with a familiarity of colors, a certain deftness in handling the brush, and to master both technical and mechanical details to a surprising extent, that may be of infinite service, and eventually succeed in producing some prettily and acceptably decorated china.

The average amateur, with conscientious aspira-

tions and diligent application, even with limited ability, will often excel where one in possession of some natural talent, but too indifferent or indolent to cultivate it, will fail. One is progressive, — the true spirit in which to enter the realms of art ; the other commonplace.

Those who have not enjoyed the privileges of a preparatory art education, but desire to undertake the decoration of china, need not be discouraged ; for every facility is offered towards its accomplishment.

It is a laudable ambition, and should be fostered ; it may lead to better things. And an effort, though a feeble one, is infinitely preferable to no effort at all. It is the absence of effort that is discouraging.

Many inducements are ostentatiously displayed to tempt the novice into making a trial. Even ideas and suggestions are supplied to those deficient in these attributes.

Having yielded to this commendable impulse of at least making an experimental effort, the untrained amateur encounters the first obstacle in his career as a china-decorator, — the inability to draft original designs. But even this need not prove an actual impediment, nor extinguish a modest ambition to continue, since designs of all sizes and description are everywhere available. To be

able to utilize these, first by simply making a fair copy, and afterwards to rearrange and adapt to other uses, is something accomplished. And if there is nothing in this achievement of which to be especially proud, at least there is nothing about it that invites reproach.

The outlines of these designs may be traced on the china, and the exigencies of the occasion vanquished. No injury is done by divesting the art of any unwelcome features that threaten incompetency. On the contrary, it is quite permissible to employ any legitimate device that will diminish labor, sustain the interest, and prove stimulating to the end in view. Transferring a design by tracing is one of them.

Tracing is an easy, quick way of securing correct results; it is a very general practice, and is, to a more or less extent, indulged in even by those who can draw. A slavish yielding to the habit is to be deplored, as it is apt to dwarf one's energies and impede progress.

But as a sure and swift method of obtaining an absolutely accurate outline — and this is indispensable where portraiture or figure work is attempted — it is not to be disparaged.

Much has been said and written for and against tracing; some condemning it as a pernicious practice, others advocating the process to insure accu-

racy. In reality, whether the design is skilfully sketched-in free hand, or traced, is of not much significance.

The enthusiastic but uninitiated amateur who desires to reproduce results at the expense of another's experience, has no alternative, and is not to be censured for resorting to mechanical rather than artistic means.

The most humble and unassuming efforts should be encouraged, and every available means adopted to cherish an awakened interest and develop a dormant talent; and to promote this industry all resources are justifiable.

Without the facility of tracing, very many would be entirely deprived of the pleasure the painting affords. Unquestionably, those who can draw possess a vast advantage over those who cannot, as they are not compelled to produce servile imitations; but there is but little merit, and still less interest, attached to copying directly from the flat, instead of the actual, model.

Under any and all circumstances, tracing, it must be admitted, is infinitely preferable to bad drawing; besides, there is even an art in tracing that but few realize.

Tracing correctly is something to be acquired by practice. The tracing of the average amateur is lacking in precision and decision of outline, the

most prominent features are carelessly done, and details are omitted altogether; and a tracing done in this manner is utterly useless.

If tracing is to be indulged in, from whatever motive as a time or labor saving device, it should be perfect to be available and of any real assistance. There should be no wavering, hesitating lines; but every stroke should mean something. No marks made at random will be of any assistance. The tracing-lines should be exactly over the copy, of a thin, fine, even, uniform quality, and should never deviate from any of these attributes. As long as tracing is depended upon wholly for designs, the decorations will be restricted to a more or less faithful copy of those furnished by others. But if the lack of previous practice and training disqualifies the amateur for creating or designing original work, it does not necessarily preclude the possibility of infusing some individuality in the form of decoration or mode of treatment.

To reproduce a perfect copy is severe discipline: it trains the perceptive faculties; and, in fact, both head and hand must work in unison. Those who have no other opportunities nor advantages of studying art can learn a great deal by copying the works of others.

A correct copy is the initial step towards prog-

ress, and will inevitably, in time, develop a desire to advance to original designing. In spite of all that is said to the contrary, there is merit of a decided character in a well-executed *fac-simile*. To conscientiously copy an artistic piece of work, with a distinct and definite motive, is one thing, and is sure to have some merit; but to imitate others' methods and mannerisms by counterfeit representations is quite another, and deserves only censure and criticism, as this is false art.

Originality, as applied to decorative art, is an expansive term, and a very wide latitude is allowed in which to exercise it. There are varying degrees of originality; and, in fact, the word "original" is capable of being largely qualified to suit occasion, and to cover innumerable contingencies.

Original decoration differs somewhat from an original painting; as the former phrase is permissible even when another's design is employed, if it is adapted or accommodated to some other shape, if in this construction it is invested with a degree of originality. While adapting a design is practically tantamount to copying it, yet sufficient diversity may be obtained to create an altogether different impression.

Perhaps this may require at times a very nice discrimination to definitely decide just where the copying ends and the originality begins; and it

may require a distinct code of ethics that will, unchallenged, confer the liberty of appropriating what virtually belongs to another.

However, a theme may be transferred from another source. An old idea reconstructed and developed, a motive or scheme of color captured elsewhere, may afford a suggestion for an entirely different treatment, and the transformation be so complete as to be entirely divested of offensive imitation.

This metamorphosis is entirely legitimate; and it is mere sophistry to maintain that it militates against the artist's ability, or that he transgresses any moral law or obligation. A wholly original design must be the emanation of individual invention, or the conception and method of interpreting a suggestion from nature or imagination, and must be spontaneous; and originality embraces those features that conspicuously distinguish one person's work from another's; not necessarily eccentric, but obviously a creation.

MATERIALS

COLORS

The novice at painting with mineral colors will probably be confused when confronted with the many technical designations applied to them, irrespective of their usual names as colors.

They are catalogued as "vitrifiable," "overglaze," "underglaze," "matt," "enamels," "raised paste," "grounding," "glass colors," etc. While the naming of the colors is merely arbitrary with the individual manufacturer, the above classification is general, and has a real significance.

All mineral colors are vitrifiable when prepared for china-painting, because they fuse at a certain temperature to the glaze and body of the ware.

Without some knowledge of the construction of a piece of porcelain (or china — they are synonymous), and a distinct idea, theoretically if not practically, of the application of both the *over-*

glaze and the *underglaze* colors, they will always be vague and meaningless terms.

Briefly, then, when a china plate, for instance, is being made, it is first moulded from moist, pliable clay, and is then subjected to an intense heat, whence it issues from the kiln in what is called the "biscuit." In this condition it presents a dull, dry appearance, is quite porous, and has a comparatively rough surface. As an article of utility, it is practically useless; as it is incapable of retaining liquids, because of its porosity.

This piece of biscuit is then brushed over with, or dipped into, the glaze (which is in a fluid form), and fired again.

Glaze is a colorless, transparent substance, partaking of the nature of glass, so that when fired and fused to the body of the ware the article is literally enclosed in a thin film of glass.

Both the body and the glaze shrink in firing, being divested of all moisture; and in order to make a perfect article they must contract in the same proportions. In other words, body and glaze must fit each other.

When a piece of ware becomes covered with small irregular cracks, it is said to be "crazed;" [1]

[1] The Chinese manufacture a ware in which the crazing is intentionally accomplished. It is called "crackle ware," and is regarded with special distinction, artistically and commercially.

and this defect is caused by the glaze shrinking more than the body, and so cracking.

After the biscuit has been glazed and fired, it comes from the kiln with a highly lustrous, polished, transparent surface, smooth to the touch, non-absorbent, and impervious to water; it is, in fact, finished, and becomes the china of commerce.

If, however, while still in the biscuit, and before receiving its coating of glaze, it is decorated, *underglaze* colors must be used. Sometimes, and under certain conditions, the decorated biscuit is fired before glazing; but whether it be or not, the glaze being applied after the painting is finished, and therefore, of necessity, over or on the decoration, it is obvious that the color is beneath or under the glaze, — the glaze being transparent, the painting is distinctly visible.

When the biscuit is allowed to be glazed and finished without the application of color, it is evident that the colors then required to paint on or over the glaze are *overglaze* colors. Compared to the long list of overglaze colors, there are but few for underglaze; and while both are formed on a mineral basis, the underglaze colors are prepared especially to resist the long and intense heat that is requisite to vitrify the glaze, as well as the colors, and fuse both to the body of the ware.

This long sustained and exceedingly high temperature, necessary to incorporate the glaze with the body, intensifies some colors and diminishes the intensity of others, while, again, some colors, except under skilful treatment, will be entirely obliterated. But though the colors are few, and the risk is great, owing to the uncertainty of the action of fire, the possibilities of underglaze work are vast, in fact, illimitable.

Overglaze colors, which are more or less transparent, used to be collectively designated as "enamel colors;" but to-day, while their application is still a process of enamelling, the word enamel is used to indicate only those opaque colors that are applied in relief and in contradistinction to the transparent painting colors, which require rather different treatment.

Relief enamels and *raised paste* are both employed to produce effects that can by no other means be obtained.

The former is used to represent or enhance an apparent projection of the object painted, and when used intelligently and restrainedly is exceedingly attractive. It is also used for modelling flowers, figures, etc.; and this is known as *pâte-sur-pâte.* Raised paste is only used as a basis for gold, and will be referred to in another chapter.

Matt or gouache colors are those which, after firing, present a dead, dull, opaque surface, entirely devoid of any lustre, and completely concealing the texture and glaze of the ware. The soft, velvet-like quality of these colors is apparent alike to the touch and to the sight.

Matt colors must never be fluxed, unless with the flux made for those particular colors, as one of the attributes of flux is to give additional glaze to colors. The usual flux for ordinary overglaze colors must be kept away from matt colors, to preserve the opaque, flat appearance, which is their distinguishing characteristic.

Some of the best specimens of decoration with matt colors are to be seen among the much-admired vases from the Royal Worcester Works. Matt colors require an exceptional treatment, inasmuch as white is added to color to obtain light shades.

Matt white is used to conceal or deaden the glaze. If color should be applied thin to produce pale tint, without the white, it would be too thin to be matt, and would be semi-glazed.

Matt colors also possess one other property peculiarly their own ; viz., gold can be laid over them before firing, but they must first be thoroughly dry and hard. "*Matt wax*" colors are those of a semi-transparent nature, and fill an in-

termediary place between glazing colors and those devoid of glaze.

Grounding-colors are those especially prepared for tinting large surfaces, as backgrounds and borders. They are sufficiently fluxed to be applied in pale, delicate tints, and in thin washes will fuse and glaze. There are twenty-six different grounding-colors on Lacroix's list (see color plates) for this purpose; but should any of the painting-colors be preferred, they must be additionally fluxed. The grounding colors are not recommended for painting, although they can be so used for any delicate work where pale tints are wanted.

Glass colors are those specially prepared and fluxed to paint with on glass. Glass fuses at a lower temperature than china, and consequently the heat required to develop china colors would melt the glass to a misshapen mass. Therefore glass colors are made to fuse at a much lower temperature. In addition to colors, raised paste and enamels, both transparent and opaque, are especially prepared for glass.

Notwithstanding all that has been said and written to the contrary, all colors for painting on china will mix, and are susceptible of unlimited combinations.

China colors are frequently alluded to as "hard," "medium," and "soft," signifying the degree of

temperature required to fuse them; as high or strong, medium or light, respectively. The same phraseology is also applicable, for the same reasons, to china, indicating the quality of the glaze; as, for instance, English china has noticeably a much softer glaze than French china.

A knowledge of the varying degrees in the quality of china is of great assistance in the manipulation of color, to produce the results sought.

The colors mentioned and recommended in this *Manual* are exclusively those from the laboratory of Lacroix of Paris. He was the first to make china-painting by amateurs a possibility; and during the twenty-five years that he has supplied these colors they have always sustained their reputation for quality and uniformity.

They are universally recognized as standard productions, and are therefore most generally used. Moreover, they are always reliable, and may be obtained anywhere,—two distinct advantages over ephemeral imitations that only possess a local reputation.

Nothing is to be gained by using colors obtained indiscriminately from various sources.

Exact reproductions of all of Lacroix's colors are given in this volume; and as it is the first time that such a scheme has been accomplished, or even attempted, it cannot fail to be of real value

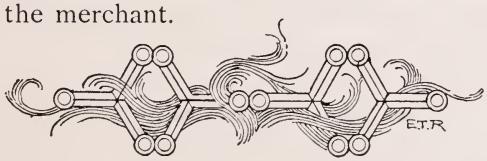
to all china-painters, and especially so to amateurs. Every shade and tint that can possibly be required, if not here shown and scheduled, may be easily obtained by combinations.

Every color shown may be obtained either in powder form or in collapsible tubes.

Compared with other pigments, the number of vitrifiable colors is limited, as the manufacturer is restricted to obtaining them from a mineral basis.

They must be reduced by grinding to as fine a powder as possible, to secure an even distribution of color. They must furthermore be prepared not only to resist the heat requisite to vitrify to the surface of the ware, but must also be made to expand and contract equally with the china to which they are applied. And they must be fluxed in just such proportions as to fuse alike and at an equal degree of temperature. Lacroix's colors are made from carefully compounded formulas, and fulfil all these requirements.

To secure the best results, it is strongly urged upon the amateur to get his art instruction and suggestions from the artist, and his merchandise from the merchant.



SELECTING AND MIXING COLORS.

In purchasing the necessary supply of colors, there is a choice between those that are in collapsible tubes, all ready prepared for instant use, and those that are still in powder form, usually put up in small vials, with a metal top, screwed on.

Each form has its particular advantages to commend it, the original cost being about equal; the actual amount of color in the vials is more than double that in the tubes.

The colors in both tubes and vials are identically the same in name and in shade.

The tube colors are certainly most convenient, especially for beginners, who have not yet learned the exact proportion of oil required in preparing them for use. This knowledge comes only with experience, but is soon acquired. The colors in tubes, in course of time, if left unused, will become hard and unmanageable until reground with fresh oil. They are in no way injured when the oil has dried out, leaving them hard, for they do not deteriorate with age; but it is uninteresting and tedious work to get them back again into a manageable condition.

Those in the dry powder remain in a perfect condition for an indefinite time.

While it requires a little more time in the first place to get them into proper condition, they are in the end, perhaps, a trifle more economical and cleaner to handle; but the minimum of money saved about equals the maximum of time and labor bestowed.

After all, it is a question of individual preference. The professional decorator in the factory invariably uses powder colors. Perhaps it would be easier for the beginner to buy tube colors, as they are ready for use; later on, a good plan would be to have some of both, — those in daily use in tubes, those used occasionally in powder.

Owing to the wide range of colors, the amateur

would be rather bewildered in making a selection, and without assistance would probably make an unfortunate choice, resulting in disappointment and consequent discouragement.

While not advocating the use of too many colors in the beginning, — believing it is well to become thoroughly familiar with the possibilities of the few at first employed, — it is recommended that a sufficient quantity and variety be provided for the subject to be painted. Better results are obtained from a full palette than by trying to make one color serve the purpose of two, generally an unsuccessful and unsatisfactory effort.

The amateur will not at first fully realize the necessity or importance of keeping colors in their purity. This quality is easily lost; and when once the painting assumes a "muddy" look, it is impossible to restore it.

Mineral colors cannot be treated in the same fashion as oil or water colors; for it is possible, by a subsequent repainting with either of these pigments, to restore a lost tint, and correct inaccuracies in drawing, but it is not so with mineral paints. They are all more or less transparent, and every wash in succession is certain to be influenced by the previous ones underneath. Light tints may easily be deepened, but a dark tone cannot be made lighter.

Sometimes the device of introducing a strong touch of the complementary color will have the appearance of raising the color to a higher key. For instance, if the greens are too gray, and are somewhat dull and uninteresting in color, the close proximity of a brilliant bit of red will restore it, and it will assume a more vivid tone of green at once.

With oil and water colors, it is usual to mix two or more together to produce greens and violets; but it is not advisable to do this with mineral colors.

One of the elementary principles of art, or rather of color, is that the combination of the two primary colors, blue and yellow, makes the secondary green, and that blue and red will produce violet shades; but with mineral colors, it is well to confine this fact to theory, and to purchase greens and violets ready made. These may be modified by other colors, — the greens with yellow, blue, or brown; the violets with blue or carmine, to any desirable shade; but it is impossible to obtain a gamut of pleasant tones of green by mixing blue and yellow. In reality, they injure or neutralize each other.

The reason is obvious, — the greens of the mineral palette are made from metals and materials that produce green in infinitely better,

brighter, clearer, purer tone than can be obtained by mixing colors on the palette. Blues are made from cobalt, and yellows from iron, antimony, zinc, etc.; and the union of either of these latter with the former will not produce a green oxide, nor will the combination ever give satisfactory greens.

The blues and carmines are more manageable; but there is no advantage even here, for should a satisfactory tint be obtained at random, the fact that it was the result of mere chance precludes duplicating it with any degree of certainty. However close the approximation may be, haphazard amalgamations are of no real benefit; and china makes certain demands, mechanical and technical, that must be respected.

Another error into which the amateur is likely to fall, if not suitably provided with a full complement of colors, is the ineffectual attempt to make a thin wash of a dark color do duty for a light shade, and *vice versa*. For instance, *carmine*, *rose*, or *English pink* must be applied very thinly to produce a pure delicate pink, as in a pink rose. But a deep pink rose can never be painted by using the same color heavier. When the darker rose is to be painted, a darker color must be used, such as *ruby*. With *carmine* and *ruby*, almost any shade may be obtained; but used separately, each has its limitations. A heavy, dark color, put on

very thin, loses its richness, and is in appearance weak and uninviting. Any one taking up china-painting for pleasure or profit should make extensive experiments of many and various combinations of colors. A systematic series, where proportions are noted and memoranda kept for future reference, will prove of inestimable value. Misgivings and doubts will soon disappear; and the painter will find himself working with greater confidence and boldness, knowing positively the result beforehand.

Tests should be made in duplicate, and only one fired. Then any change made in the firing is at once perceptible. Tests need only cost time. Pieces of broken china may be obtained at any store where china is sold, — it is imperative that it should be a new piece. Those who do their own firing have an extra advantage over those who do not. But any firer will fire these samples free of charge.

The endeavor to impress the necessity of having a sufficient variety of colors must not lead the reader to belief in a widespread fallacy that obtained for many years, that mineral colors would not mix. That misapprehension had no foundation, and was exploded long ago.

The fact is, in any kind of painting, and with any pigment, — and mineral colors in this respect are no exception, — colors must be modified in

order to fulfil the requirements of art, and to produce harmonious results.

In painting a cluster of pink roses, but very little pure color is used. The highest lights, the shadows, reflected light, transmitted light, etc., must be expressed by other tones than the local color.

Trees in a landscape, especially if on three different planes, — the foreground, the middle distance, and those at a remote point of vision, — cannot be expressed with one shade of green.

A differentiation in color is indispensable to delineate perspective and atmospheric effects. Color must be qualified to obtain a scale of gradation to suit the demands of the subject, otherwise the crude appearance of raw color would create a very unpleasant and unnatural result.

To assert on one page that greens cannot be obtained by mixing, and on another that they must be mixed to obtain the best results, may seem inconsistent. To avoid any misunderstanding, an illustration will exactly explain this apparent contradiction, and it is an important one to remember.

Chrome green is a very raw, cold green, bluish in tone, and, though one of the useful greens, is seldom used in its crude condition. But its value depends upon the ease with which a whole range

of greens may be obtained from it as a basis. It readily lends itself for a variety of purposes by being qualified with *yellow*, *brown*, or even *blue* and *carmine*, with the most charming results; and just in the proportion in which they are added will the *yellow*, *brown*, *blue*, or *carmine* predominate.

Yet useful as is this color, — *chrome green*, — it is insufficient for all purposes; and two or three additional ones give greater satisfaction, a more diversified scheme of color, and greater variety, for general work.

To recapitulate, — provide a variety of colors in their pure state, and then modify them, by a judicious mixing, to harmonize with the scheme of color suitable to the subject in hand. The same advice is equally good in reference to gray tones.

Grays are absolutely indispensable in all painting where any effort is made to model a form; neither rotundity nor distance can be depicted without gray. In a flat, purely conventional design, there is no necessity for grays; but they are absolutely requisite to delineate a natural object by a realistic treatment.

To model with only light and heavy shades of one color is absolutely bad.

In this statement monochromes are not included. They have their place in art; always had

and always will. They have distinctive features, all their own; and in spite of blue trees, brown skies, or red water, their distinguishing characteristics are respected and admired.

A reference to the colored plates will reveal a large variety of shades of gray, more or less useful.

Pearl gray, the softest and most delicate tint, is quite a necessary adjunct to the color-box. It is useful in many ways. It is a good glazing color, fusing readily, and can be freely used; mixes well with other colors, and its introduction in small quantities does not materially change their hue, as it fires very largely away. *Warm gray* is also equally useful. It is a soft, pinkish color, and may be freely used. *Neutral gray* is a very dark, cold, intense color, seldom used, and then generally in connection with other colors.

Royal Copenhagen gray, a color recently added to the Lacroix list, is a pleasing and manageable color; alone, it is a beautiful tint, and it combines well with other colors in the matter of shading.

All of the grays glaze well. Those mentioned are used more generally than the others.

In the matter of grays, however, the best results are obtained by making grays rather than by purchasing them ready made.

Gray is the result of neutralizing one color with another; and the most agreeable tones are likely

to be those made from the colors in use, and out on the palette, rather than by the substitution of others. They are more in unison with the scheme of color, and consequently harmonize better.

A manufactured gray is made warm or cool in proportion to the amount and quality of color introduced. Red and yellow are lively tones, and produce warm tints, while blue in predominance is excessively cool. Violet is an intermediate tone.

In theory, the three primary colors, red, blue, and yellow, in a given proportion, will counterbalance or neutralize each other; but with mineral colors, seldom more than two are requisite to produce a satisfactory gray. A good example of the first principle is a mixture of *carmine, silver yellow,* and *ultra-marine,* which can be made to have either color predominate.

Apple green and *carmine* make a soft, pearly tone, very delicate in quality, and useful when combined with pink. Either *deep red brown* or *violet of iron,* combined with *deep blue green,* forms a somewhat stronger tint, and is useful to shade blue flowers or drapery. It is also good for clouds and distant effects.

Deep red brown is a vivid color, and must be used with discretion with blue to produce very lovely violet grays, capable of being bluish or reddish at will.

A still stronger tone is obtained from deep purple and dark green No. 7. Perhaps one of the safest and best of grays is one made from *deep blue green* or *air blue* and *orange*. With these a most delightful range of tints may be made, varied to suit the subject, from a cool, bluish gray, through several shades, assuming a greenish tone, to a warm yellow tint. This is especially good for white flowers and draperies ; and, being delicate, there is less danger of using too much than with some of the stronger grays.

Attention must be called to this color, *orange*. It is not, as has frequently been supposed, *orange yellow ;* by consulting the color pages it will be seen there is a vast difference, and one cannot be substituted for the other.

Although not a new color, having been known and used by professional decorators for many years, it is almost unknown to the amateur ; but now that it is put up by Lacroix, uniform with the rest of the colors, it will doubtless become better known, and prove a valuable addition to the palette. It not only makes desirable grays, — with the addition of blue, — but tones greens and yellows if too vivid, mixes well with ruby for reddish rose-stems, and in a variety of ways is useful.[1]

[1] Having used this color for many years, and recognizing its value, the writer suggested to Mr. Lacroix the propriety of pre-

If, however, the beginner is doubtful how to mix or make grays, he should use those that are ready made, but should never attempt to paint without grays. This is imperative, and cannot be too strongly impressed. Grays that are purchased are infinitely preferable to no grays at all, so necessary are they in modelling anything that has form, perspective, light, or shade.

Two grays recently added, one *gray for flowers,* the other *gray for flesh,* are made specially for the purposes indicated, and in the line of mixed grays readily assimilate with other colors. This relieves much hesitation, as it expedites a choice according to the requirements of the subject.

Finally, avoid using black for shading. It is harsh and cold, and, except skilfully used, is not pleasing. It is rather hazardous for a beginner to handle; but if it is to be used, get *Brunswick black,* as it is capable of producing very clear tones in thin washes. *Ivory black* is a good strong color, but one not always safe to fire twice if used pure. Sometimes it will chip off at the second firing. This disaster may be averted, provided a small quantity of *sky blue, pearl gray,* or *neutral gray* be

paring and placing it on the market in the same form as his other colors, as hitherto it has been only procurable in bulk. Mr. Lacroix willingly complied, and one of the valuable acquisitions to china-painting is now available to all.

added, in sufficiently slight quantities as not to impair the color.

Aside from the hard tones of black, which are far from agreeable, it aptly illustrates a previous statement, that dark, deep, strong colors are not as appropriate for pale, thin, delicate tints as those which approximate the scale of the local color.

Black is the darkest and strongest color, and has its legitimate place. Only an expert should attempt to use it for any effect for which the use of another color will do.

SETTING THE PALETTE

The fewest colors recommended to the beginner with which to do the average general work are three greens, — *apple green, chrome green,* and *brown green;* one pink, — *carmine No. 1;* one crimson, — *ruby;* one purple, — *deep violet of gold;* one red, — *deep red brown;* two yellows, — *yellow for mixing* and *silver yellow;* one blue, — *deep blue green;* two browns, — *orange* and *brown No. 3.* These, with *violet of iron* and flux, form a simple, inexpensive list of colors quite sufficient to produce a variety of decorations. But probably the less experienced will require more colors than those already acquainted with the possibilities of these few. Therefore the following additional

colors are to be recommended: *Yellow brown, chestnut brown, brown M, brown No. 4, Vandyke brown,* and *black brown. Yellow ochre* and *sepia* are also useful.

Emerald stone green, *moss green J, olive green,* and *dark green No. 7* may be used with advantage. *Shading green* is another fine color. *Carnation No. 1* and *capucine red* are two valuable additional reds. *Ivory yellow, Albert's yellow,* and *orange yellow* each has its place; and *pearl gray, warm gray, neutral gray,* and *gold gray* are almost indispensable. *Sky blue* is important for flesh, and *deep blue* for any dark rich effects unattainable with *deep blue green.* Either *deep purple* or *purple No. 2* will be found in many cases a good substitute for *ruby purple,* which is a much more expensive color.

It is customary to have one black. Either *Brunswick black* or *ivory black* will do. *White enamel* is used for high lights in relief and decorative scrolls; *permanent yellow,* another relief color, is used to represent the stamens in flowers, such as are seen in wild roses, apple and cherry blossoms, etc. The list may close with *relief paste for gold.*

While it is by no means necessary to possess all of these colors, it is a selection found most useful after many years' experience.

From time to time it will be found expedient to make additions for certain specified decorations, and then the color plates will prove most valuable.

Without entering into a lengthy disquisition of the component parts, or attempting an elaborate analysis of their chemical attributes, a few words relative to their peculiar properties as colors will not be amiss.

These colors are all made from metallic oxides, minerals, and earths, from which certain salts, chlorides, silicates, and aluminates have been extracted. On a previous page, mention is made of cobalt, from which blue is derived, and antimony, zinc, and iron, from which yellows are principally obtained. Greens are made from chromium; reds from iron; black from iron and cobalt, intensified with copper and manganese; brown from cobalt and iron, modified by ochre and zinc; white from tin; and carmines, crimsons, purples, and violets from gold, and are known as the gold colors.

Greens predominate on the list, and embrace a greater and more widely diversified variety of shades than any other color. Greens change very little in the firing, and usually glaze well, except *black green No. 7*, which requires fluxing.

Notwithstanding the multiplicity of tints, affording a wide range and ample scope for individual

taste in selection, they are seldom used without some slight modification. They mix well with the yellows, one particularly — *yellow for mixing* — forming an especially agreeable line of warm tints. With *yellow for mixing*, *apple green*, *chrome green*, *emerald stone green*, *brown green*, and *black green No. 7*, and their various combinations, any desirable scale of greens may be obtained, from the young and tender shades of the early shoots of spring, through the full, brilliant, vivid tones of summer foliage, into the successive shades of olives and glowing russets of autumn, to the low and mellow tones of the sombre evergreens of winter.

Brown is used to tone vivid greens to olive; *carmine* or *ruby purple*, applied in a very thin wash over the green, will also reduce the color considerably. *Violet of iron* is also very useful used in conjunction with greens, giving a degree of warmth frequently required in floral designs. If the green be too yellow, a thin wash of blue, or one of the blue greens, may rectify it. If too blue, a wash of *yellow brown* or *chestnut brown* will give it the necessary warmth and richness.

Brown green, an invaluable color as it comes from the tube, is seldom qualified by any other, and is more frequently used pure than otherwise.

As a general thing, the greens are very pliable

and easily managed, and, as the change produced in the firing is scarcely perceptible, are very satisfactory colors.

The reds are easily distinguished from the pinks and crimsons as being of more brilliant vivid coloring, entirely different in quality, and the nearest approach in the mineral palette to vermilion or scarlet.

Deep red brown, capucine red, and *orange red* are the most useful. The first mentioned is listed under browns, but it is devoid of any tint of the general acceptation of the word brown. On the contrary, it is a very bright red, and one of the most serviceable of colors. Although of a brilliant shade, in its full strength, used very thin and fluxed, it is frequently used as a substitute for pinks, and even for flesh tones, combined with *silver yellow. Carnation No. 1* is also frequently used for a similar purpose. Both combine well with yellow, and produce very pleasant salmon and shrimp pink shades.

While *carnation,* fluxed and applied in very thin washes, is sometimes used to paint pink flowers, and though quite agreeable in tint, it really is not a pure or rose pink. This particular shade is only obtained from the gold colors.

While the reds mix freely with the yellows, care must be exercised when *yellow for mixing* is

used, not to exceed certain proportions, otherwise, after firing, no red will be perceptible. *Yellow for mixing* will devour all reds if an excess is used. It would be better to avoid this combination altogether, although one portion of *yellow for mixing*, one of *ivory yellow*, and one of *carnation No. 1*, will produce satisfactory results. Any of the reds used thin require additional flux.

Capucine is still more vivid than *deep red brown*, and is useful for very bright flowers, such as poppies, and berries like holly. It is also the red used in heraldry. *Flame red* makes an attractive tinting color, very clear and brilliant.

Red is sometimes used for edges and handles of cups, saucers, pitchers, etc., instead of gold. Red is an easy color to manipulate, and is to be recommended as a practise color, as for instance, to acquire facility in tinting and in the application of gold, for lace borders, etc. All of the reds will fire satisfactorily, if intelligently placed in the kiln.

Too hot firing causes them to change to an ugly color, and if fired too hot and too long will inevitably and irrevocably turn black.

On the contrary, if not fired enough they will wipe off in irregular patches. *Carnation* especially will do this if thinly applied, unless highly fluxed. Even with the most successful firing they

change somewhat, becoming perceptibly darker by repeated firings. But when these qualities are once thoroughly understood, an allowance is made, and in the end red will be found satisfactory and quite indispensable.

Violet of iron is one of the most delightful of reds, and of inestimable value to the china painter. It is a subdued, low tone, and combines well with blues, greens, and browns. It requires a pretty sharp fire to glaze, when used pure, as in a monochrome, for which it is one of the most charming and restful of colors.

It may seem almost unnecessary to give a special admonition with reference to this color; but the fact is, strange as it may appear, that *violet of iron* and *violet of gold* are often thoughtlessly confounded one with the other. This is inexcusable in any but the beginner who is not yet familiar with the colors; but as an interchange involves considerable difference in results, it is well to guard against making this error.

Violet of iron is made from the oxide of iron, and is red. *Violet of gold* is made from gold, and is purple. They are totally unlike, and one cannot be substituted for the other.

There are two shades of *violet of gold*, light and dark. The light is quite pinkish, and in the dark the blue predominates. These may be modified to

any extent by the addition of blue, — usually *deep blue green*, — or *carmine*, or one of the purples. This word "purple," as referring to what is generally called crimson, such as *ruby purple*, *crimson purple*, etc., is apt to be confusing, as it does not correspond with the purple of the pansy, for instance. In other words, purple of the mineral palette is applied to crimson, and does not signify the color generally known as royal purple.[1]

Both *deep violet of gold* and *light violet of gold* are exquisite shades of purple, and the nearest approach to the color for pansies, lilacs, violets, iris, or fleur-de-lis, clematis, and, in fact, all purple flowers.

The yellows are the easiest of all colors to use, and, with the exception of *ivory yellow*, fire and glaze well.

Ivory yellow sometimes is, under certain conditions, a little unreliable. Used pure, it will not admit of many firings.

It, however, possesses one agreeable quality as a compensation that makes it valuable, — it is one of the soft, and consequently very fusible, colors.

[1] This color, known as Tyrian purple, the only purple color known to the ancients, was obtained from a mollusk, and only in very minute quantities; hence its value. Its production formed the chief industry of the city of Tyre, and was adopted by the ancients as the symbol of imperial power, probably from its great scarcity and enormous cost.

It can often be introduced to advantage for this quality alone, and do no detriment to other colors. In fact, this very delicate color is frequently a decided acquisition, particularly in harmonizing the general treatment, by giving the entire painting the thinnest wash imaginable, called glazing. It gives thereby an additional warmth to white flowers, draperies, etc.; but when employed for this purpose, it must not be deep enough to change the white flower to a yellow one, but just sufficient to veil the cold harsh gloss of the surface of pure white china.

Having already referred to *yellow for mixing* as the best in conjunction with greens, it must be added that it is by no means used exclusively for this purpose; for both *silver yellow* and *orange yellow* are both used to render a crude green less harsh and more agreeable. Although called *yellow for mixing*, its capacity to mix has its limitations, and had better be confined to greens. It is usually fatal to reds.

Silver yellow is one of the invaluable colors; indeed, there is no better yellow for general work. It is equally satisfying, from the palest tint of a thin wash to its full strength. *Albert's yellow* is another fine color, a trifle stronger than *silver yellow*, but very pliable.

Orange yellow is the deepest and strongest of

all, and requires more skilful treatment. It will utterly absorb reds or browns if mixed with them for shading. Mixed with a black, it makes a rich dark olive green. There is not much necessity for *orange yellow*, as *silver yellow* answers the purpose for yellow flowers, draperies, fruit, and tinting.

By consulting the color plates, it will be seen that there are a large number and variety of blues. Many of these have names that indicate at once their special uses, such as *sky blue*, *old blue*, *delft blue*, *cornflower blue*, *old Rouen blue*, and *Holland blue*.

The prettiest and most useful, however, is listed under the greens, and its name is *deep blue green*. It is not green at all, but the most perfect pure blue of the mineral colors. It is always lovely applied in any degree of strength, although when strong it is by no means dark. It is generally useful; indeed, one can scarcely paint without it. It is used for all blue flowers, draperies, skies; in fact, everywhere a pretty blue is wanted. It combines well with green, red, pink, gray, and *violet of iron* for shadowy effects and vague forms, as seen in the distance; and with *violet of gold* every possible variety required for violets, lilacs, and orchids; in fact, with any color except yellow, and with this it assumes a disagreeable gray tone.

However, there is really no necessity for this combination; for greens are to be procured from the manufacturer, and not mixed on the palette.

Deep blue green is the azure of heraldry, and is also introduced in flesh tones. If used for tinting, or a very pale color is aimed at, it should be fluxed, or have a modicum of light sky blue, a soft glazing color, added to it.

Sky blue and *air blue* are both used for skies; and, as they both fuse at a low temperature, are frequently introduced for the glazing qualities, instead of *flux*.

Flux does not strictly belong to the list of colors, as it is white; but as it is an important ingredient, and in a more or less degree exists in all colors, it is perhaps necessary to explain its use, that the beginner may understand its peculiar properties, and be able to use it intelligently. To be able to manage the refluxing of colors successfully requires, first, some knowledge of the essential characteristics of flux; secondly, individual experience. The first may be, to a certain extent, explained; the second is only acquired by experiment.

Flux is the medium by which the color is united, in the kiln, to the glaze of the china; without *flux*, color would not fuse to any vitreous body. All colors, therefore, are fluxed when manufac-

tured, but are fluxed to be used in their full strength.

Now, when colors are used in a less degree than full strength, it is obvious they are deficient in this vitrifiable element. Consequently, the thinner the wash of color, the less the quantity of *flux* is distributed.

Herein lies the difference between the painting colors and grounding colors; these latter, being prepared especially to be applied for tinting, — usually in a delicate wash, — are abundantly fluxed, and require no additional fluxing. On the contrary, whenever painting colors are to do duty as tinting colors, or to be applied for any other purpose in a faint wash, they must have additional *flux* thoroughly incorporated with them, and the amount is in exact proportion to the quantity of color used, or, rather, the extent of surface over which a certain portion of color is to be distributed.

The direct action of *flux* is twofold; for it not only assists the color to amalgamate to the surface of the china, but gives it that much desired quality of glaze. It is the medium of obtaining the beautiful, brilliant lustre that is so absolutely necessary for perfect work, and without which a painting appears dead, dull, and unfinished, no matter how well executed.

Desirable as it is to have an intelligent compre-

hension of the attributes of *flux*, it is equally expedient to understand the quality of the glaze on the ware, whether hard or soft, as an excess of *flux* is rather more of a defect than its absence, when used indiscriminately.

This nice adjustment of color and *flux* to the ware can only be attained by observation and experiment.

Firing is another element that enters into successful fluxing, as the less *flux* the more heat required to fuse. A well-fluxed color will vitrify at a much lower temperature than a color deficient in this quality.

There is a way to avoid using *flux*, should any doubt exist as to proportions, or until greater familiarity is acquired with the various features connected with its intelligent use; and that is to introduce, in its stead, some one of the soft colors. Very nearly the same results may be thus obtained — sometimes even richer effects, as a color highly fluxed must, of necessity, change its tint somewhat. It does not exactly impair it; but the additional *flux* certainly acts in the nature of an adulterant, and dilutes the color a trifle.

Pearl gray possesses this peculiarity to a high degree, and is always satisfactory. It will not materially change any color, and fires away very considerably.

Sky blue may safely be added to blues, violets, and to some greens with good effect; *ivory yellow* to greens, yellows, reds, and browns, the last being particularly deficient in glazing properties.

A good sample test for practice is to first note proportion of either *flux* or the fusible color used, and apply it in three different degrees of strength, — full strength, medium, and the thinnest wash; then fire, compare results, and make a mental, if not a written, note as a guide for the future.

A thorough understanding of refluxing by either of these means — it is immaterial which — is not only essential to the ultimate perfection of china-painting, but of vital importance; and this fact cannot be too strongly impressed upon the beginner.

A color should be fluxed for the first firing, and it will not be necessary for a subsequent repainting.

A variety of browns is absolutely indispensable, as they enter largely into all designs. It is well to provide these in several gradations of shade, from light yellow to the darkest brown, which is almost black.

Once accustomed to using browns, no painting will ever seem complete without them. *Yellow brown, chestnut brown, brown M, brown No. 3, brown No. 4, Vandyke brown,* and *black brown* are among those most useful.

Sepia cannot always be relied on to retain its color in process of firing, but sometimes this is an advantage.

Light brown and *yellow ochre* are so similar to *yellow brown*, that one may easily be substituted for the other.

The gold colors, of all the colors, are the most difficult to manage. They consist of the *carmines*, *pinks*, *roses*, and *crimsons*, — called *purples*, — and include the *light violet of gold* and *dark violet of gold.*

Carmine is called the "test color;" and though this has especial reference to firing, it is as well a test of one's ability; for the skilful manipulation of *carmine* is considered a standard of experience.

Both the firing of this color and its application require special treatment. If underfired, it comes from the kiln yellowish, and by no means agreeable in tone. Another and a stronger firing will restore it. If, on the contrary, it is fired too hard, it will come out with a blue or purplish tint, that is even uglier than before, and far more disappointing, as this defect is irremediable. The lovely soft pure hue of pink is destroyed forever.

Sometimes a thin wash of *carnation No. 1*, fluxed and given a rather light fire, will improve this; but *carmine* once destroyed by overfiring is beyond restoration.

There are four carmines. The palest is *carmine A;* the others are designated numerically, with corresponding degrees of shade, and are *No. 1*, *No. 2*, and *No. 3* respectively. *No. 1* is more used than the others, and applied and fired intelligently is a most satisfactory color for pink flowers, draperies, etc. Everybody, however, does not make the nice discrimination between a pink and a pale red, and therefore does not appreciate the value of the gold pinks.

The difference may be easily distinguished if a sample of both a gold color and iron color (red) be fired and compared. *Carmine* will be a delightful pure rose pink, and the *carnation*, or *deep red brown*, will inevitably present a tinge of red with an admixture of yellow; and while both may be equally admired, and one may serve the purpose as well as the other, it is an indisputable fact that one is pink and the other pale red.

What is here said relative to *carmine* is equally true about *rose*, *English pink*, and other gold pinks.

In addition to a proper degree of heat, to develop the carmines, there is another imperative fact to be rigidly observed to secure the best results, and obtain the full beauty and purity of tint. It must be applied in the thinnest washes possible; the thinner the color, the more dainty and delicate will be the tint.

Before *carmine* is fired, it has not the remotest resemblance to the perfect pink it is after firing; and a beginner is very apt to apply the color too heavily, with consequent disappointment. *Carmine* will turn a very disagreeable color, and very yellow, if applied heavy, and more than probable will blister and chip off.

It is because *carmine* makes these peremptory demands that it requires special treatment, and that recourse is sometimes made to one of the reds as a substitute.

While the pale tint of the reds, always violent, may not be exactly objectionable, no one should be allured to believe that they will produce a real rose pink.

Since the disaster has already been explained which will be sure to result if the carmine be applied too thick in the endeavor to obtain a dark pink, suffice it to admonish the amateur not to make the attempt, but instead to add a trifle of *ruby purple* to the *carmine*, and the shades will be in due proportion to the amount added.

Carmines and *ruby*, in fact all the *gold colors*, require a strong firing to develop their full possibilities; and the heavier the *carmine* is put on the stronger must be the firing; and this exceedingly high temperature is likely to destroy other colors in the kiln. Indeed, the heat required for

Carmine Nos. 2 and *3* would be even too strong for *No. 1*.

Carmine is a sensitive color, and is easily smirched from contact with an unclean brush or a soiled knife. Clean turpentine is, therefore, essential in conjunction with *carmine*. Some even go to the extent of having separate brushes for *carmine;* for if the slightest tinge of green or yellow or blue remain in the brush it will impart it to carmine. But as brushes and palette knife can both be thoroughly cleansed in alcohol, the same brush will answer for all colors, if these precautionary measures are carefully adopted.

As a matter of fact, the utmost care and cleanliness must be observed in every particular in connection with china-painting tools and implements. The victim of untidiness is betrayed, for his sins will surely find him out.

BRUSHES

Too much cannot be said in favor of having not only good brushes, but a good assortment of them.

A bad brush is responsible for a great deal of bad work. The best the market affords is none too good for china-painting; and although they cost more than inferior ones, they give greater satisfaction, last longer, and in the end are really more economical.

There is a very wide latitude in selecting brushes, both as to quality and quantity. Having secured a good brush, it should be well taken care of, and it will amply repay any attention bestowed upon its preservation.

It is useless to attempt to do good work with inefficient materials and tools; and a poor, cheap brush — and a cheap brush is always poor — is

not conducive to the moral, mental, or physical condition of the painter. If this fact be considered and estimated in the cost, the expense of a good brush will be more than counterbalanced by the comfort and convenience in its working qualities; and it is not what may seem to the inexperienced an excessive or unnecessary expenditure.

A few brushes, provided they are of the right kind, are sufficient for almost any kind of work. They can instantly be cleansed in alcohol, and be used freely to apply several successive colors.

It is advisable to use as large a brush as can be conveniently handled. A beginner's timidity induces the selecting of too small brushes, but it is better to become accustomed to large brushes in the very beginning. If the handling of a large brush is under control, a small one is easily managed; but if, on the contrary, only small brushes are used, when it becomes necessary to use a large one, it will be awkward and unmanageable, and give more or less trouble.

Those who have never handled brushes before will find it just as easy to acquire the use of a large one as a small one; those who have become habituated to the use of small brushes cannot discontinue the practice too soon. Paint may be laid on more quickly and more smoothly by the large brush.

It is impossible to lay a uniform tint or a grad-

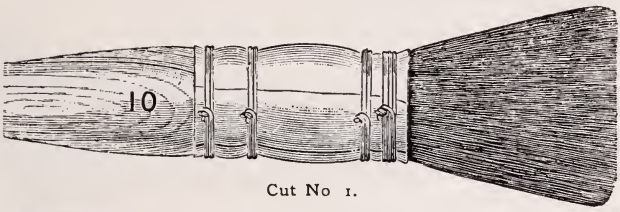
uated wash of color with a small brush. It is true that inequalities may be partially overcome by blending, but this practice is not recommended for all occasions.

Blending, by means of a brush or pad, has its proper place, and is of vast assistance in many instances. When a large surface is to be covered, either with a graduated or uniform tint, it is the only means of attaining the desired result; and this process is recommended as the surest and easiest method of obtaining a perfect and satisfactory tint. But to depend upon it altogether, for all work, is a most pernicious practice, and should be abolished. Accustomed to its continual use, it is impossible to do without it. Suppress, or rather resist, the impulse to use a blender to smooth out brush-marks and even up tints. It is a bad habit (and, like all others, easy to acquire), with the inevitable result of flatness, until all designs look as though they had been stepped on, or ironed out.

It is preferable to obtain the same result by the legitimate means of skilful handling of the brush, rather than by resorting to artificial methods. Intelligently used, it is of immense advantage. Used to conceal faulty manipulation, it is invariably bad. It sometimes results in a "woolly" appearance that is both unnatural and unattractive.

As there are legitimate uses for the blender or pad, the china-painter's equipment is not complete without several of different sizes.

Pads may be made of any smooth fabric that is devoid of lint. It should be soft material; and old stuff that has undergone much wear and tear, and



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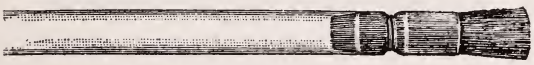
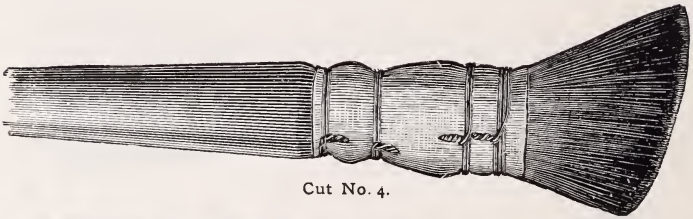


Cut No. 3.

is entirely destitute of fuzzinesss from frequent washing, is preferable to new. Old handkerchiefs, either linen or silk, chamois-skin, kid gloves, and even discarded gauze undervests, are capital for very large pads. Whatever the material, it must be perfectly clean, dry, and smooth. Cut it the

desired size, and wrap it around a ball of raw cotton, and gathering up the ends, tie together with a string, — this secures the ends, and forms a handle, — and it is ready for instant use.

There are special brushes for blending, and a use will be found occasionally for two or three. They come in assorted sizes. A convenient size



Cut No. 4.

Cut No 5.

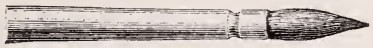
Cut No. 6.

for general work is *No. 10.* But for large surfaces and spaces, *No. 14* should be used. These large sizes come in wooden handles. (Cut No. 1.) The smaller sizes are in quill handles, and are invaluable in painting figures, heads, Cupids, etc. (Cut No. 3.) An intermediary size comes in a double quill. (Cut No. 2.) Some of these *blender brushes* are slanting on the edge; that is, one side of the

brush is longer than the other. (Cut No. 4.) These are called *deer-foot*, and are convenient for getting around handles, inside of cups, and other uneven surfaces.

The best brushes for painting china are those called *square shaders*. (Cuts Nos. 5 and 6.) They come in quills; and two large ones, a *No. 10* and *12*, and two smaller sizes, a *No. 6*, *7*, or *8*, are quite sufficient for the ordinary painting. Each brush should be provided with a cedar handle.

Before inserting the handle, throw the new brush in a cup of water, to soak for a few hours. This



Cut No. 7.

softens the quill, and the handle is fitted without danger of splitting, as the quill when dry is brittle, and liable to split if this precaution is neglected.

Handles should fit snugly, to avoid any possibility of the brush slipping or falling off; but they should never be forced in the quill. If the handles are too large, reduce them by rubbing with sandpaper, rather than cutting with a knife. This method keeps the handles round. After the handle is firmly attached to the brush, sharpen the other end to a point with a penknife; this end will be found to be very serviceable for cutting

out high lights, cleaning up edges, and many other purposes that need not be enumerated, as they will be discovered by degrees.

A short pointed brush (Cut No. 7) is useful to take out high lights in modelling, and is to be used before the paint becomes too dry. A *No. 5* or *6* will be found a convenient size. A *small quill blender, No. 4* or *5*, is also used for removing color. The curling petals of a flower can be beautifully delineated with such a *short painting-brush*, very slightly dampened with clove-oil; and, in fact, all lost lights can be restored by this means infinitely better than by scratching out, which is not only a villanous method of removing color, but unavoidably leaves harsh, sharp edges, whereas using a damp brush leaves the edges charmingly soft, and devoid of distinct lines.

Cut No. 8.

A long, thin, pointed brush, called "*miniature*" pencil, is necessary for stippling. (Cut No. 8.)

Stippling, it should be explained, is the application of color by the slightest touches from the point of a brush. It is sometimes called "*pointing.*" These minute touches of color must not show as spots or specks of color, but must be so blended one in the other as to form a uniform color, or graduation from one color to another. Stippling is necessary in figure work, and for re-

pairing accidental damages. It is a little difficult at first to do at all; but by practice, one is enabled to do it perfectly. The usual difficulty to overcome is the use of too much and too strong color. A similar brush, though longer than a *stippling-brush*, will be found useful for finishing-

Cut No. 9.

touches and deepest accents. These are called *tracers*. (Cut No. 9.) *No. 1* is a useful brush; and two will be necessary, — one for color; the other must be kept for gold.

A free handling of a tracer will produce grace-

Cut No. 10.

ful grasses and stems, and give better results for distant effects of these than any other.

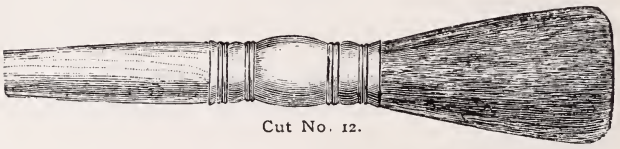
A red sable liner No. 1 brush (Cut No. 10) should be used for enamel, when it is to be applied

Cut No. 11.

as highest points of light-relief scrolls or ornamental dots. It is important to keep this brush only for this purpose, and not use it for anything else.

For raised paste and gold, special brushes are made. These are somewhat longer than the ordinary painting-brushes, and are known in the trade as *Trenton tracers.* (Cut No. 11.)

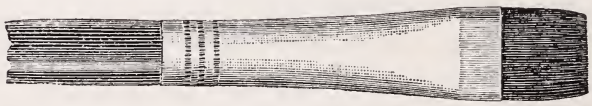
For very fine lines, it is frequently necessary to cut off the outer rows of hairs. This is done with a knife or scissors, and the cutting is done close to the quill. This will leave a remarkably thin



Cut No. 12.

brush, capable of fine work, with a long, sharp point.

A red sable liner No. 1 should be kept exclusively for india-ink, and should be marked in some way on the handle to prevent its being used



Cut No. 13.

for painting. It is equally important never to use a painting-brush in the india-ink.

Square shaders of extra size come in wooden handles; they are *Nos. 11 and 13.* These are

called *grounding-brushes*, and are useful for covering large spaces, either in ground-laying, tinting, or painting. (Cut No. 12.)

For applying delicate tints of color, a *tinting-brush* should be employed. (Cut No. 13.) These are very thin, flat brushes, and work very smoothly. Being thin, they do not absorb or retain any more color than is required, and are to be recommended for this purpose beyond all other brushes. They come in a half a dozen sizes or widths, with metal ferrules and polished wooden handles. They are made of Russia sable, and are delightful to use.

A similar brush is an *elastic tinting-brush*, and is desirable as being just one-half the price of a Russia sable brush. These *elastic brushes* are really very good, and quite satisfactory for tinting; and if they have not so much spring as the Russia sable, have quite enough for the purpose for which they are made and required.

The spring or elasticity of a brush is a test of its quality. A good brush, when wet with color and pressed on the object or material to receive the color, will spring back and resume its normal condition immediately upon being removed. Bad brushes remain at the angle at which they are used.

While giving these suggestive hints regarding brushes, their use is by no means compulsory. Some always prefer a short brush to a long one,

and *vice versa*. But the long brush for paste-work and gold is most generally used by professional decorators, and they usually have the faculty of securing those tools which will do the best work in the least possible time.

There is nothing, however, to prevent the use of other kinds and shapes of brushes, if the same results can be obtained. It is largely a matter of choice; and persons are perfectly justified in exercising their own discretion, and even whims, and selecting that brush, whether it be long or short, which gives the most satisfaction, and enables the individual to produce the best work.

It will be found necessary, during a few hours' painting, to frequently wash out the brush before changing from one color to another.

It is customary to have at hand for this purpose a cup containing turpentine. If *turpentine* is offensive, *alcohol* may be substituted. When wishing to free the brush of color, it is not necessary to disturb the sediment at the bottom of the cup; but gently shake the brush on the surface of the turpentine, and if necessary press lightly on the sides of the cup.

Never stir up the entire contents unnecessarily. One excellent plan, whereby brushes may be cleansed, and at the same time the *turpentine* kept comparatively clean for painting, is to simply dip

the brush in the *turpentine*, withdraw it at once, and softly pat it on a rag, pressing very gently, to remove the color. This may be repeated till the brush be perfectly clean.

At the end of the day's work, brushes should have their final washing in *alcohol*. Nothing so effectually removes every particle of color, and leaves the brush in a pliable condition.

If alcohol is not available, soap and warm (not hot) water will take its place. If brushes be kept in a box or any similar receptacle, it should be sufficiently long to protect the points, and to prevent the hairs from bending. A cylindrical jar is a good thing to keep brushes in; and they should be thrust in handle down, and brush-end up. If, however, a brush is accidentally allowed to dry in a bent or crooked, twisted position, it is utterly useless until restored to its original shape. This may be accomplished by moistening the brush with a solution of gum arabic, or any water paste, and gently pulling out straight till it is dry enough to remain so. Set it aside for a few days, then wash out in warm water, when it will be found to have assumed its normal condition.

MEDIUMS

A medium is the liquid vehicle with which the pigments are ground; and the same medium is usually employed in applying the pigments and to obtain, by their use, the different degrees and gradations of color.

In mineral colors, various oils are used for this purpose. A *thick* or *fat* oil, which is usually a heavy oil derived from turpentine, is very generally used to amalgamate and hold the color. But with this medium alone, it would be impossible to paint, as it is thick, sticky, and quite unmanageable until thinned. Now, since this thick oil is the residuum from the evaporated spirits of turpentine, spirits of turpentine is used to dilute it to the proper consistency for painting. This may be freely added in any desired proportion.

An expert in the use of mineral colors seldom has occasion to deviate from these two mediums in ordinary decorations. Spirits of turpentine dries quickly and a certain amount of skill is required to use it successfully. The less skilful the painter,

the more time is required to produce the same effect; consequently, another medium must be resorted to, — one that will not dry so rapidly, thus giving more time to cover the allotted space.

For this purpose some one of the essential oils is employed. Lavender is the one most generally used. Clove-oil is preferred by some, as being even a slower dryer than lavender.

Those who dislike the odor of these, may use aniseed-oil. Others frequently used are tar-oil, and balsam of copaiba.

It is quite immaterial which medium is employed. Some one or two of those mentioned is a necessity, but it is a matter altogether of individual preference.

To many, the odor of turpentine is unpleasant. These may use lavender-oil and alcohol, in about equal proportions, with satisfactory results.

In china-painting, there need be no material used that is offensive. The amateur is counselled to use at all times the medium or method by which the best results are obtained by himself, and not to be influenced too much by the experience of others. Any of these mediums mentioned are reliable, and may be used with safety.

Thick or fat oil may be so easily accumulated that no one need ever purchase it but once, in the beginning. Spirits of turpentine should be fresh

when used, and rectified from all foreign matter and other impurities. In this condition it is exceedingly volatile; and as it evaporates it becomes thicker or fatter, and greasy. In this condition it is not wise to attempt to paint with it, but it should be set aside to evaporate still more.

In time it is reduced to a thick, heavy oil, which is the commercial *fat oil*, sold under several names. To prevent it from collecting dust, — and it has a predisposition to accumulate it in vast quantities, — it is well to cover the vessel in which it is kept. A piece of perforated cardboard is good, so that evaporation may still continue. When it has reached this condition, — that of a heavy, thick mass of oil, — it may be poured off into a bottle, corked, and kept for future use.

The spirits of turpentine in use one day may be in good condition for next day's use, but it is always more satisfactory to have it clean and fresh at the beginning of each day's work. It is a very cheap commodity, and is not expensive even when used recklessly and extravagantly. That in use today for painting and cleansing the brushes may be put aside for twenty-four hours, when it will be found to have cleared itself.

Mineral colors are heavy, and soon settle to the bottom of the vessel containing the turpentine. The vessel can then be gently tilted, and the clear

turpentine carefully poured off into a clean vessel, and the sediment thrown away. The turpentine in time will become *thick oil.* Keep the bottle containing the spirits of turpentine tightly corked, to prevent evaporation, and wrap a rag several times around the neck, just below the cork, to absorb the exudations, and prevent the bottle from becoming sticky and unpleasant to handle.

It is equally expedient to have the essential oils also fresh. In this condition they are in a thin, fluid state, and dry well. When old, they become greasy and unfit for use. This defect may in a measure be overcome by adding alcohol, but it is much better to have the oil fresh.

While spirits of turpentine, lavender, clove, and anise oils are almost colorless when fresh, they become dark when exposed to the light for any considerable time.

Tar-oil, on the contrary, is dark to begin with, and lends a slight tinge of itself to the color, which, however, only lasts till it is fired. No one need be disturbed by this apparent change of tint, and it is a very pleasant and manageable medium with which to work.

The number of "painting-mediums" and "tinting-oils" and other "mixtures" on the market is legion. While perhaps none are absolutely bad, some may be better than others. They generally

consist of a combination of two or three of the oils mentioned, in various proportions, and are usually the result of the compounder's individual experience or preference. While the ingredients and proportions are usually withheld from the purchaser, there can be no monopoly nor proprietary rights in any of them. It savors too strongly of patent medicines. There is nothing to prevent any china-painter from preparing, in any desirable proportion, any combination of the oils mentioned.

Nothing is gained by secrets and mysteries in china-painting, beyond the commercial advantages of profit.

The reader is advised to try these several oils, and to ultimately adopt that or those which give to him the best results; and having ascertained this from actual experience, to adhere to it until thoroughly familiar with its possibilities. Those mentioned are standard articles, and may be obtained anywhere and at any time. Whereas, if entirely dependent upon certain formulas and mixtures, endless perplexity results if the painter be suddenly deprived of them.

The tube colors are already mixed with their proportion of thick oil, and the only medium necessary to manipulate them with ease is turpentine; or, if a large surface is to be covered, lavender-oil should be used. Lavender-oil keeps the color

"*open*" a little longer, usually allowing ample time to obtain the desired result. If, however, the worker is slow and hesitating, clove-oil is to be recommended in preference. It is seldom necessary to add thick oil. With the powder colors, however, the thick oil is most essential, and must be added in about equal quantity in bulk to the amount of powder.

Mix with the palette knife until thoroughly incorporated, then thin with either lavender or spirits of turpentine, or even both. The exact quantity must be determined by experience. Just so much is required as to enable the painter to get over a specified surface before it dries; and it is desirable as soon as this has been accomplished to dry immediately. Therefore the only gauge is good judgment, which can only be acquired by practice. The larger the surface to be covered, the longer must the color be kept from drying; and the less expert usually require more oil than those who, accustomed to its use, can work expeditiously. It is not easy to give more definite directions as to quantity, as it so largely depends upon the dexterity of the painter.

Spirits of wine, or alcohol, is indispensable for cleaning brushes, palette, knife, etc. Turpentine will answer for this purpose in lieu of alcohol, but it does not cleanse those articles so thor-

oughly nor so easily. Besides, brushes should never be put away after a rinsing-out in turpentine alone. It not only makes the hairs brittle, but rarely entirely removes the color. If a brush, having been used in blue, for instance, is not thoroughly washed until divested of every trace of blue, be dipped into *Carmine No. 1*, a tinge of blue will inevitably be imparted, that will effectually destroy the purity of the carmine. This may not be noticed before firing, but as blue is a strong color it will be quite perceptible afterwards.

If alcohol is not convenient, turpentine will do to clean palette and knife; but soap and warm water must be resorted to for brushes.

Alcohol does the same work, with less labor and more despatch.

It cannot be too strongly urged that cleanliness and neatness in all the details and appurtenances of china-painting are of paramount importance.

Every accessory must be kept scrupulously clean, and nothing can accomplish this so quickly and with such ease as alcohol. As alcohol evaporates very quickly, it should be kept tightly corked; and a good plan is to keep a wide-necked bottle especially in which to clean brushes. It should be sufficiently large to admit the brush. The color settles at the bottom, and the alcohol always remains clear and clean.

PALETTES

A palette is a necessary accompaniment to the equipment; and, as in some other things, there is a wide latitude for selection and individual preference. It is useful to mix and hold colors ready for use.

Formerly a square of heavy ground glass was considered all that was desirable, but it has been superseded by several others much better.

That most generally used is a white glazed tile. Either one 6 × 6, or 8 × 8, will be found suitable.

A piece of plain window glass will of course answer the purpose admirably; but if this is substituted for the white tile, it is recommended to fasten something white, either paper or muslin, under it, in order to enable the painter to distinctly see the exact shade of color.

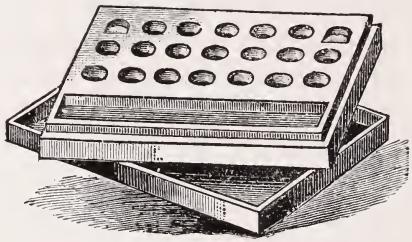
As the glass and the colors are both transparent, the latter would be seen to a disadvantage if placed on anything else than white. In other words, whatever the glass rests upon would influence the colors, and to a certain extent impart an apparent tinge of color they would not otherwise have.

In using either a tile or a piece of glass, place the colors in a row across the top, at equi-distant

intervals, and reserve the rest of the space for mixing tints and trying the brush.

Another palette, quite convenient if powder colors are used, consists of a china box, with a lid. This box contains a number of little hemispherical spaces or sunken wells, to hold the colors.

This has one special advantage, inasmuch as, having a cover to protect the colors from dust,



Cut No. 14.

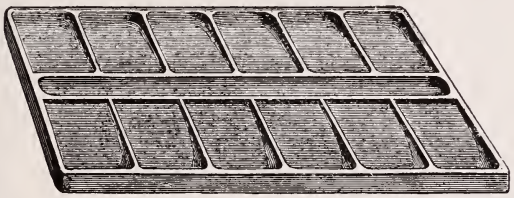
it may be kept quite clean, and in good condition for use for a long time. The lid may be utilized to mix colors upon; although a tile is much more desirable, and will be found very convenient in conjunction with this sort of a palette.

Still another palette much in vogue, and to be recommended in preference to any other, especially for those who paint constantly, is a double slant. This contains slanting spaces to hold a dozen colors, six on each side; and, being on an

incline, the color naturally seeks its level in the deepest part.

This is an admirable arrangement, and keeps colors entirely under control, the divisions keeping them apart.

It can be kept in a box, or covered, when not in use.



Cut No. 15.

PALETTE KNIVES

One or two palette knives will be needful, to mix and grind colors. These come in a variety of shapes, sizes, and materials. They are made from ivory, bone, horn, and steel. One of the latter is necessary, and, provided it is kept immaculately clean and free from any possibility of rust, will prove all-sufficient. Rust is the oxide of iron (from which certain reds are made); and it will effectually ruin some colors, — blues for instance, — if incorporated with them.

Although this would be imperceptible at the

time, it would be fully developed in the kiln, and would prove fatal.

It is on this account that a horn or bone knife is to be recommended. These are inventions for the careless, thoughtless, disorderly, and untidy student.

Cut No. 16.

Accidents from these causes are entirely inexcusable. There are enough difficulties to encounter and overcome naturally, without adding the unpardonable one of slovenliness.

A good flexible steel knife is quite sufficient for every purpose, even for gold, notwithstanding all that has been written and said to the contrary.

Keep it clean, and take care of it, and it will be serviceable many years. But for those who neglect these precautions, horn and bone knives are provided; but it is a sad commentary on our habits, not to be able to use a steel knife, even for gold.

Cut No. 17.

The two best shapes are those as represented in cuts 16 and 17. Either will answer the purpose. No. 16 is entirely new in size, being a $2\frac{1}{4}$-inch blade, while its shape is the old familiar regulation spatula.

OTHER ACCESSORIES

A lithographic pencil is most frequently used to draw the design in free hand on china. This is especially useful where it is done in a quick, light, sketchy manner, where the outline is simply indicated, without regard to finished detail. In painting over it, as soon as the brush comes in contact with the drawing every vestige will disappear.

The drawing with a lithographic pencil is obliterated so easily, that it is not to be recommended to those who would become confused by any loss of outlines, and unable to proceed without the drawing.

For this class it is advisable to make the drawing secure, by doing it with india ink. Carmine, or any vegetable color, may be substituted, provided it is a water-color. These will all fire away, and possess the additional advantage of remaining intact during painting. The mineral-colors are mixed with oil, the sketching-colors with water; therefore, it is obvious that, as oil and water do not readily mix, the drawing remains.

Moreover, if the painting is not satisfactory, it may be washed entirely off with a few drops of lavender-oil on a rag, and the drawing will not be disturbed. This not only saves time, but also the labor of redrawing the design, which is frequently an uninteresting process, and apt to be tiresome if one is compelled to repeat it many times.

The ordinary lead-pencil may be used to make a sketch ; but the hard, glossy surface of china does not readily lend itself to this medium. The china must be prepared by wiping it over with a rag moistened with turpentine, and it will be found to respond at once to every stroke of the pencil.

When this method is employed, however, there are two distinct disadvantages, — the pencil marks are easily obliterated while painting, and thus the drawing may be lost ; and the film of turpentine, distributed over the china, leaves an unpleasant surface to paint on, one that is far from agreeable, and that interferes with good work.

If sketching is more easily accomplished with a lead-pencil, the drawing may be gone over with india ink, and then the turpentine cleaned off the china before applying the color. There is nothing so desirable to paint on as perfectly clean china, and nothing so exasperating as to try and lay a smooth wash over a sticky surface.

Turpentine is easily removed by either lavender

or clove oil, or alcohol. A few drops of either is sufficient.

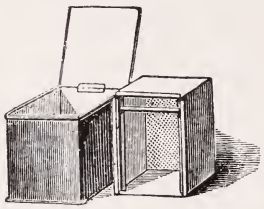
Right here, perhaps, it is as well as anywhere to state that "a few drops" has frequently proved a stumbling-block to beginners. They are often advised to add "a few drops" of this or that oil, or, to be very definite, "two drops" of one kind, and "five drops" of another. This may sound very definite, but, as a matter of fact, is misleading.

A drop is a very variable quantity. A drop poured from a bottle is rather more than if dropped from the point of a fine needle ; and this, in turn, is considerably less than if dropped from the blunt end of a brush handle, or even from the brush itself, if of large size.

Besides, the specific gravity of these different oils and the state of the weather must be considered. A drop of thick oil is larger in bulk and weight than a drop of lavender-oil or spirits of turpentine, and both are larger when cold than warm. It is therefore a somewhat relative term among china-painters, to indicate a very small quantity, rather than to be taken literally, as in medicine, where it is so necessary to be accurate that it is regulated, and the dropper for correct measurement accompanies the bottle.

If one intends to do constant work, a brush-washer will be very desirable.

This is a japanned tin box, and is fitted with a lid or cover, which prevents rapid evaporation.



Cut No. 18.

A smaller box fits inside, with a sieve in the middle. Brushes can receive a thorough cleansing in this box, without disturbing the sediment at the bottom. A wire fastened across the top is to press out the superfluous turpentine.

TRACING

If a design is to be copied exactly, tracing-paper will facilitate the process. In conjunction with the tracing-paper, there is often used a colored carbon or transferring-paper. Red or black is preferable. Both of these, however, have a soft, smutty surface, and make with the slightest pressure a thick, heavy mark, that is very undesirable. It is almost impossible to use it for fine work, like an intricate geometrical border, with thin, narrow lines, or for features of a small face, as in a Cupid.

There is a much better way of tracing and transferring the design to be painted, — a way in which this impression paper is dispensed with altogether. This method is not only easier and

cleaner, but gives better and more accurate results.

Select a thin quality of tracing-paper, and, when about to use it, wipe both sides with a soft rag, slightly moistened with oil of lavender. This will make it still more transparent, and enable the amateur to see the copy better, and to follow the outlines more closely and clearly in every detail and feature of the subject. Place the tracing-paper over the design, and go over every outline with a sharp pointed lead-pencil, a soft one to be preferred, because a light stroke is all that is then sufficient. There is no necessity to use pressure, and with a hard pencil this is involuntarily done. This process demands considerable nicety and precision, and only experience will teach the value of extreme accuracy. Perhaps a slight deviation in the outlines of a floral design may not be observed, indeed, may not be incorrect; but to vary the lines of the human face would be fatal. A hair's breadth would destroy a likeness, whether it be added or taken from, either eyes, nose, or mouth.

Having obtained a clean, clear, and correct reproduction of the copy, brush the back of the tracing lightly with powdered graphite. This is the same substance from which lead-pencils are made, and is reduced to an almost impalpable powder.

Very little is sufficient to be distributed over a large surface, and a superfluous quantity will produce unsightly and annoying smears over the china. As little as possible is to be used; just enough to give the paper a tinge of darkness, without being black.

If the paper be sufficiently moist with the lavender before the graphite be rubbed on, it is not necessary to use any turpentine on the china; but if this be neglected, the surface of the china must be wiped over with turpentine, and allowed to dry before attempting to transfer the design. This serves as a "*tooth*," and nicely takes every line; otherwise the china will not receive the impression.

Place the tracing-paper in the exact position, and fasten firmly to prevent slipping. This may be done with wax, or strips of gummed paper, — the outer edges of a sheet of postage-stamps, where the mucilage has spread, answers this purpose admirably.

Then either with a very sharp pointed, hard lead-pencil, or stick, — as the end of a brush-handle whittled to a fine point, — go over each and every line before made, as indicated. An agate or ivory stylus is convenient for this purpose.

If these directions have been followed, it will be found, upon removing the paper, that a perfect

picture is there, and an exact reproduction in outline of the copy.

The next thing to do is to go over the entire tracing on the china with india ink, using water and a very fine and pointed brush. This brush should be kept separate from the painting-brushes, and used exclusively for this purpose; and care should be taken to keep it straight and always to a point. This is done to secure the drawing, and provides beforehand against any unfortunate accident that necessitates wiping off the painting and commencing again.

The india-ink line should exactly follow the tracing in a delicate, uniformly even, thin line.

After this is accomplished, a good plan, before commencing to paint, is to cleanse the china, and free it from every trace of graphite, and thus have a clean piece of china on which to work.

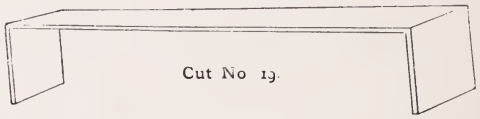
This is easily done by wiping it over with a rag slightly moistened with lavender. This evaporates immediately, and leaves the china in a beautiful condition to receive color.

This may seem a long, and perhaps even complicated, process; but it is the only process possible for those who are without previous instruction in the elementary rules of drawing.

One of the essential features in all painting is first to obtain an accurate drawing; and, uninter-

esting as it may appear, the method herewith given for tracing is the easiest way of transferring the design. It requires time, considerable patience, and nice handling; but, when accomplished, half the battle is won.

The subsequent work will be comparatively easy. No detail should be omitted, as it will be found to be the very foundation to future success; and no amount of care and attention bestowed on the drawing is wasted.



Cut No 19.

A hand rest is very useful for certain kinds of work, and especially for those whose hand is not sufficiently steady without a support.

While there may be no use for one in decorating small articles that are easily held in one hand while painting with the other, they will be found convenient when painting large plaques and similar articles. One large enough to extend across the plaque, and rest on the table, will be helpful, and prevent accidents from contact with the hand. If one of these be not obtainable, a ruler may be

held across the plaque steadily, which will give firm support to the painting hand.

A rest for brushes will be found a convenient adjunct. It is made of china, is five inches long, and its object is to keep the brushes in use from being bent, or coming in contact with any foreign matter if thrown down promiscuously. When doing some pieces of work, it may be found necessary to dry the paintings quickly and repeatedly, in order to proceed. A spirit or alcohol lamp is convenient for this purpose.

Cut No. 20.

A small jeweller's lamp with a handle is suitable; it is light in weight, and easily moved to and fro over the painting without fear of smoking or cracking the china, which it probably would do if kept in one place.

Where a kiln or oven is accessible, the lamp may be dispensed with. China may be set in an oven attached either to the kitchen range or a gas-stove to dry, with perfect freedom. Should the oven be so hot as to scorch the color, there is no reason to be disturbed over it. It will eventually be all right when it is fired, as it will be subjected to much more intense heat than is obtainable in any ordinary oven.

An alcohol lamp is handy for warming gold, if

there is no other means convenient. Gold is more pliable when warmed.

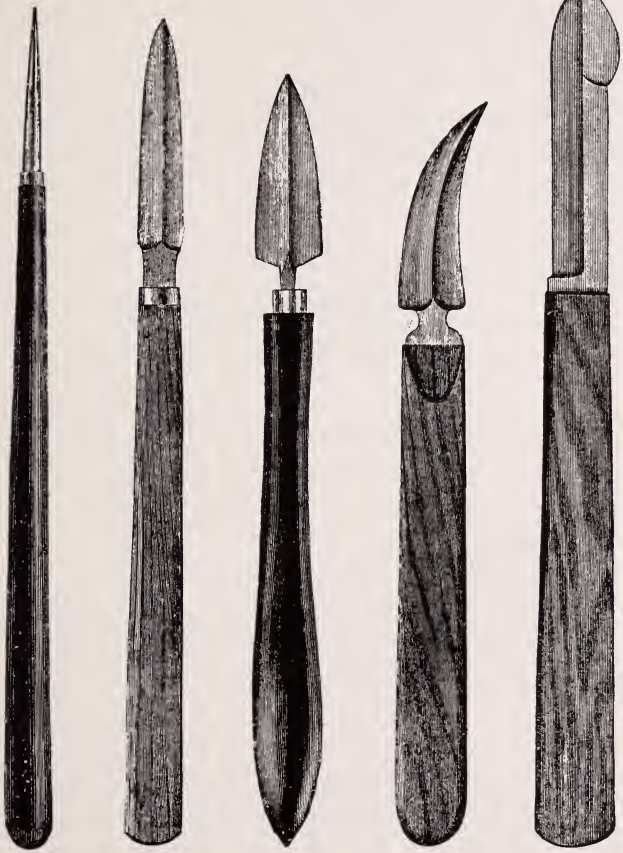
A little steel-pointed erasing-pin (Cut No. 21) is a useful instrument to pick up specks of dust, if they accumulate before the paint is dry. A home-made one will answer the same purpose. Select a fine cambric needle, a No. 9, and insert it by the eye end in a cedar brush-handle, having about half of it exposed. These trifles all help to make good work easy.

Another dust-scraper, a steel blade, sharp on both sides, terminating to a point, is of value to the china-painter. (Cut No. 22.)

Three color erasers, one curved to reach around handles and other crooked, inaccessible places, are used sometimes for what their names suggest. (Cuts Nos. 23, 24, and 25.)

Hydrofluoric acid is a valuable adjunct, but too great caution cannot be exercised in regard to it. It is a most powerful acid, and exceedingly dangerous, destroying everything with which it comes in contact. One puts his personal safety in jeopardy every time it is handled. If dropped upon the hand, it will produce the most excruciating torture until its power is exhausted, which sometimes requires several days. Amputation has sometimes been necessary. This acid comes in rubber bottles, as it would eat through glass;

and, as a precautionary measure against accidents, rubber gloves should be worn when it is used.



No. 21. No. 22. No. 23. No. 24. No. 25.

Place the bottle in a tin box, to prevent it from falling over.

When using it, wrap a little raw cotton around a pointed stick, moisten with water, and dip in the acid, and then rub the china till the color is removed.

Hydrofluoric acid should only be resorted to, to remove a small inaccuracy or disfigurement after firing, and is not intended to be used to take off an entire decoration.

Sometimes a small pointed stick, like a toothpick, will serve the purpose without the cotton. Ample precaution for accidents should be taken, before using, to have plenty of water and rags within reach.

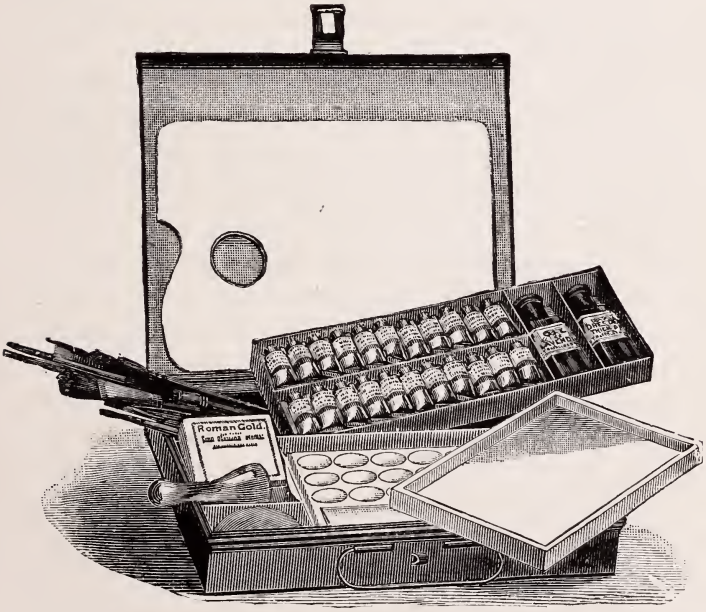
Sweet oil is an antidote. The acid is usually diluted with water before using, as the fumes arising from the pure acid are not only exceedingly unpleasant to inhale, but likely to attack the glaze of the china near where it is applied.

Unless a person is exceedingly careful, and able to guard against every possible accident, it should be let severely alone. It is mentioned here as the only thing to remove color when once fired.

An abundance of old, soft rags, as devoid of lint as possible, will be found a great convenience, if not an absolutely essential requisite ; and last, but not least, among the needfuls, may be mentioned

plenty of courage and perseverance, determination, and unlimited patience. Though not purchasable commodities, these are quite as necessary to the equipment for painting china as anything mentioned.

Boxes are made especially to contain this outfit. They are of japanned tin or polished wood, and are divided into compartments. The following is one of many styles and sizes, is very compact, and is recommended.



INSTRUCTION

MONOCHROME

A monochrome, or **Camaieu,** is a painting done with one color.

Some very beautiful effects may be produced in this manner, provided the subject is attractive, the technic all that is desirable, the chiaroscuro correct; in fact, if treated both skilfully and intelligently.

While the beginner cannot hope to compass all the qualifications of the expert, his first efforts will probably be more acceptable, and give greater satisfaction, if but one color is employed.

There are several reasons for this. One that perhaps appeals to a large majority is the slight cost of the experiment.

The expense of procuring a complete outfit has undoubtedly very often proved a deterrent factor against mineral painting.

The hesitation to incur the expense is more fre-

quently due to lack of confidence as to capacity and ultimate success than to lack of funds; and it is useless to purchase a full complement of colors, brushes, etc., unless there is a very definite determination to continue. Therefore, if doubts are entertained as to the ultimate success of the venture, it may be made at a very small outlay for materials.

One color will afford some slight insight into the manipulation of color and brushes; and if the attempt prove an utter failure, or offers no inducement to continue, it would certainly be a satisfaction to know the experience was not a costly one.

If the experiment of one color is successful, and the beginner is sufficiently encouraged to continue, there need no longer be any hesitancy in regard to procuring anything and everything required.

After finishing one article, there is no mistaking the inclination to continue or to stop.

But aside from the economical point of view, first efforts should be confined to one color, on principle. There will probably arise, at this stage of the art, numerous difficulties to be overcome with even one color, without being handicapped by that of handling several colors.

Monochromes are much easier of accomplishment than polychromes, and trifling incongruities of both color and correctness as to light and

shade are not nearly so pronounced as if the same design was in the natural colors. Unless specially warned, a beginner usually uses too much color; and if the subject be painted realistically, it will be apt to be crude and harsh.

This fault is not so perceptible if one color is employed, for these amateurish defects are then less in evidence.

But monochromes must not be regarded by the beginner with contempt, as indicating or betraying ignorance and inexperience.

It is the amount of skill rather than the amount of color bestowed on the work that emphasizes proficiency.

The expert can infuse individuality and originality, in addition to every degree of light and shade, and other values, with one color as well as with a dozen.

Moreover, monochromes are always desirable for both utility and ornament. They are restful and pleasing.

The Oriental nations understood this art of using one color to perfection; and, later, Europe recognized its value, and began to imitate them. The old Holland Delft-ware was a direct result of this, and to-day blue and white decorations are just as popular as they were centuries ago.

The recent revival of Delft designs in the blue

and white decorations affords abundant illustrations and innumerable hints and suggestions of what to do, and how to do it.

These curious old Dutch scenes, of flat, low, level land, the inevitable waterways stretching out in every direction, containing a variety of oddly fashioned sailing-craft, the quaintly costumed peasants, the sabotiers, and, of course, the ubiquitous windmill, are the characteristics of this style of painting, and quite within the scope of the veriest tyro in art.

A reference to the color plates will reveal several shades of blue, any one of which may be used. *Old Holland blue*, *Delft blue*, *old blue*, *old Rouen blue*, all make charming blue monochromes.

After securing the outlines by india ink, and having the china perfectly clean, commence to paint.

Have everything in readiness and within reach before squeezing out the color from the tube. If the metal top refuses to yield without pressure, and will not unscrew easily, do not force it. Light a match, and hold the tube so that the top is in the blaze, and it will become loose almost instantly, and easy to remove.

Squeeze color always from the very bottom of the tube, and by degrees as the color is pushed from that end of the tube, fold it over. This keeps the color always together in a compact mass.

The quantity to be taken out must be regulated by the size of the design. It is not necessary to take out very much, even for a large piece of work.

The cost of colors will be found to be rather in their waste than in their use.

Very little color covers a large surface; and, when using only one color, if the supply is exhausted, it can instantly be renewed by squeezing out more from the tube. If, however, two or more colors are used to produce a certain shade, it would be better to mix at once all the subject requires, rather than trust, in a hit-or-miss fashion, to obtaining the exact tint by a second mixing. But in using only one color this perplexity is obviated.

The certainty of matching a previously mixed tint is by no means assured, and an access of color is far preferable to a deficiency. Besides, the superfluous color need not necessarily be wasted.

Add a few drops of lavender-oil, and mix or rub with the palette knife until these ingredients are thoroughly incorporated.

If the lavender is very fresh, it is exceedingly volatile, and if the weather is warm and dry, it will evaporate rapidly; under these conditions a few drops of fat oil will delay evaporation, and render it more manageable.

The lighter the tint required, the thinner must be the color; and even where a heavy, dark shade is indicated, it is better to arrive at it by several successive thin washes, than attempt to obtain the full strength of the color with one application.

Before another painting, the color must be thoroughly dry, or even fired. Firing will give better results, perhaps, to the beginner, as the attempt to go over the first painting a second time before firing frequently results in disaster.

China is not responsive to the brush. It has a hard, glossy surface, does not absorb color, and, until dexterity is acquired in handling the brush, more color is apt to be removed than applied, when going over a previous painting a second time before firing. This is one of the most exasperating difficulties to overcome in china-painting.

To be able to place one wash of color over another, without "lifting" or "picking up" the under tint, indicates clever handling. It requires lightness of touch, decision, experience, and general proficiency.

All those not in possession of these attributes had better defer the attempt until fully qualified. More color may be applied with ease after firing, and this is the safer plan for the beginner to adopt.

If one has a distinct idea of exactly what is to

be done, it is almost equivalent to an accomplished fact. Having the conception, the next thing to do is to put it into execution. This operation must be achieved without hesitation.

First definitely decide what to do, then do it. Do it in the best manner possible; and if, with limited experience, it is an utter failure, wipe it all off, benefit by the experience, and try again. It is the only remedy. To attempt to patch it makes it all the worse, and, at its best, a botch.

Practise laying one color over another, until no disastrous consequences follow. Try it over and over and over again, until an assured confidence is manifested in every stroke of the brush.

To control the handling of the brush, so that it obeys the will, is an acquired faculty; and until this is attained, advancement in the art of china-painting is impossible.

The beginner is naturally reluctant to stop painting with the design still incomplete. There is an irresistible impulse to add a few touches here and there, to strengthen a color, to deepen a shadow, to accentuate a detail; and only after repeated failures will the utter futility be apparent. In ninety-nine cases out of a hundred, the beginner yields to the impulse, and disappointment follows.

All of which means that there is an art in knowing when to stop.

If the beginner would be content to lay in the color for the first firing in nearly flat washes, or only approximate the light and shade in broad masses of color, until some skill was acquired, and dexterity in manipulation was assured, how much better it would be.

The knack of working over color is not beyond any one's ability, and in time one becomes so proficient as to progress the work in hand to a high degree of finish before firing.

To return to the monochrome, which is supposed to be landscape, with some floating white clouds on a pale blue sky, a windmill in a conspicuous place, and the most prominent object in view. In the foreground there may be a rowboat on a canal, and a village in the distance just at the horizon, where sky and water meet.

With a large brush, begin at the top of the design, and paint in first the sky, and then the most distant effects, gradually advancing the work forward. Try the brush on the tile, to test the tint and condition of the color, before applying to the article to be painted. The sky is not dark, but must be delicately treated, and one painting will probably be sufficient. The color should appear exactly as it is expected to when finished.

Blue never fires paler ; some blues even seem to get brighter and " bluer " with each subsequent

firing. Therefore, if the color is too dark, thin it with lavender until the desired and correct tint be produced.

Paint the sky exactly as indicated in the copy. With short, swift strokes cover the space as expeditiously as possible. Where the white of the clouds is visible, omit color entirely, but paint the surrounding china lightly, using less color. As the horizon is reached, dilute the color with more lavender, to lighten the tint. This is generally effected by simply dipping the end of the brush in the lavender. The brush will be found sufficiently charged with color to give the desired tint.

After this is done, and it should, even at this stage, present an approximate approach to the copy, with the pad begin to "dab" the color.

Hold the pad at right angles with the china, and quickly and lightly strike it in short, successive touches, barely allowing the pad to come in contact with the china.

This process is to be continued until a uniform or a graduated tint is acquired. The spaces left white will be found to have a tinge of color just sufficient to cover the china, and subdue the glittering white glaze. This almost imperceptible tint is distributed from the pad, which will be found to absorb some of the color.

This blending should be commenced at the top,

and continued downwards; and if by the time the bottom is reached, the top has dried, it must not be retouched. If, on the contrary, too much oil has been used, and it refuses to dry, padding may be resumed, if there still exists inequalities in the tint to be smoothed out. Perhaps a clean pad may be necessary, if the one first in use is surcharged with color. And this blending should continue until the color is at the point of drying. This will prevent any undue accumulation of small floating particles of dust.

Mineral colors, and most particularly the gold colors, seem to possess a special affinity for dust, attracting every small atom that is within a radius of several feet of the worker. This is very vexatious and also ruinous to one's peace of mind as well as to the china.

It must be avoided at all hazards, even at the sacrifice of time, labor, and personal convenience.

Dust is fatal in its consequence to good work; and although specks of dust and lint are destroyed in the kiln, there is quite enough evidence left of their previous existence.

Particles of dust accumulate color; and it seems to settle around each atom, leaving a spot of color that is unavoidably perceptible.

Too much oil will inevitably produce this defect. The remedy is to add more color, powder color if

convenient, and after wiping off every trace of the spoiled color on the china, to begin the work over again.

Having erred once from using too much oil, and seen the direful consequences, so difficult to obliterate, is an object-lesson, and of more real benefit than pages of printed matter.

Judgment will teach how little to use in order to avoid failure in the future.

All tinting except ground-laying is managed in a similar manner; and if these suggestions have been followed, there is nothing new to be added in reference to tinting. Directions for ground-laying will follow.

In continuing the landscape, after the sky, comes the most distant objects; and whether these be hills, trees, houses, or water, they should be vague and rather indefinite, — more suggestive than distinct. This treatment lends an atmosphere, enhances the distance, and gives a perspective otherwise unattainable.

One of the very worst possible features of painting is to ignore this tenet. To paint everything visible on one plane, and at an equal distance from the beholder, is positively bad.

As objects are removed, they grow gradually less distinct in form and color, in direct proportion to the distance; and the greater the distance, the

less detail is observed. A great deal of bad decoration is the result of ignorance or indifference to these facts, and their importance cannot be overestimated.

A flat decoration or conventional ornament is not governed by the observance of such laws as are required in a natural, realistic treatment; but in a landscape, perspective is an essential requisite, and this may be delineated in all truth and sincerity with one color as well as with a dozen.

After simply indicating, in a rather vague and shadowy manner, the most distant objects, by little color and light touches, add more and more color and strength to the details as the work progresses towards the foreground.

Above all, avoid hard, sharp lines anywhere. In nature they do not exist; and they have no place in a reproduction, even in the most feeble effort.

Having obtained a soft, delicate, smooth sky by blending, a contrary course must be pursued to represent the stream of water flowing through the landscape. Although to a certain extent it is a reflection of the sky, or the surrounding scenery and nearest adjacent objects, — the echo is a different movement. Whereas a blender was used to straighten out inequalities of color and brush-marks in the sky, one must never be employed in a like manner for the water.

The brush must be used horizontally ; and let the brush-marks show this direction. Into this the shadows and reflections may be painted perpendicularly with fine effect. When nearly dry, erase with any fine-pointed tool (a brush or stick) slightly moistened with either turpentine, lavender, or even water, some thin lines of color here and there, and the water-effect will be greatly enhanced.

These thread-like lines of white china indicate ripples ; they should be made delicately, and in short, straight, horizontal lines.

A few are all-sufficient ; and these should not appear in a haphazard fashion, nor must any regularity be maintained.

By observing any painted landscape, including a water-view, the value of these fine white lines will be perceived at once. Should color, by padding or otherwise, encroach within the outlines of the windmill, clean it off neatly before painting it. It will be much easier to paint on clean china than china that is smeared with color.

Paint the windmill with considerable strength in color, and with due regard to form and detail. Avoid over-working. Anything and everything may be added after firing, but nothing can be removed. The nearest object is the boat ; and here full liberty is allowed to paint in any amount of detail, — the stronger the better.

The nearer and more distinct this is, the farther off will the rest seem; and if these suggestions have been understood and carried out, everything in the picture plane will at once assume its proper and appropriate position. The sky will be overhead, and not hang like a curtain behind the scene. The distant objects will be on a level with the eye, and not travelling up-hill. The windmill will be the middle distance, and the boat in the foreground.

If this is not apparent, the work is a failure; and it is much better to do it over again than perpetuate a mistake by having it fired.

An amateur had better not attempt to finish up for one firing, although monochromes can be brought to a very high degree of finish by a skilful worker with but one visit to the kiln. But until one becomes an adept, two, or even three, firings are desirable.

If the object is to imitate the old Delft-ware, no gold should be used in connection with it. If the scene was painted on a tile or panel, a quaint little ebony frame should complete it; but if this style of decoration is used on ornamental articles or table-ware, the edges and handles may be of the same color.

It is thus more characteristic. But this does not mean that monochromes must never have any

gold decoration. On the contrary, a little gold is a great addition, and enhances the elegance of decorated china very considerably.

Other colors than blue are frequently used for monochromes, and no one need confine his efforts to any one particular color.

Violet of iron is equally as pretty, and affords a variety that is charming.

Violet of iron requires refluxing for thin washes, and moreover needs a strong fire to glaze well.

Deep red brown and *violet of iron* are frequently combined to great advantage; and a rich, warm, monotint is the result. Brown is often used also; and sometimes a combination of grays of a different scale and brown form pleasing effects.

Two, three, or four browns may be used very effectively, and the painting be none the less a monochrome. But the browns so used should harmonize. *Yellow ochre, sepia, yellow brown, brown No. 3,* and *brown No. 4,* is a charming scale.

A small article can be made very attractive by tinting with an even, pale, delicate tone of color, and working over this a design in the same color. Some of the greens, with a maidenhair fern design, or *violet of gold,* with violets, are pleasing combinations. In fact, monochromes are unlimited in their variety. They are invariably admired, always safe, and generally easy.

LANDSCAPES

Landscapes in colors are always interesting, and what has been written in regard to perspective and general treatment with one color is duly applicable in reference to painting a landscape in natural colors.

The sky may be painted with *deep blue green*, and clouds formed in the same way, or wiped off, before the color dries, with a piece of raw cotton wrapped around a pointed stick, keeping edges soft.

If clouds have a shadow tint on them, it may be made with *warm gray* and *air blue;* a delicate violet gray, or a deeper tone, may be made by mixing *deep blue green* and *violet of iron* together in any desired proportions.

The distance must be kept gray, and consequently gray tones enter largely into all the local colors to produce a far-away appearance.

Suppose, for instance, a group of trees, with a red-tiled roof cottage in their midst, form the most distant objects.

Although without any doubt those trees are in reality as vivid and green as those in the foreground, yet, if painted so, they would appear too near, and would fail to convey the impression of distance. They do not appear so in nature ; for the atmosphere intervenes and acts like a veil, slightly obscuring, without concealing, color and form.

This misty distance is grayish in quality, and is represented better by a greenish gray than by grayish green, if this distinction can be appreciated and felt. The difference is slight, but is recognized by artists.

The same grayishness must be perceptible in the red tiles. The intervention of atmospheric qualities also reduces the red ; and both red and green must be painted even lower in tone than if they were not in such close combination. Red and green are complementary colors, and in juxtaposition each renders the other more vivid. So it is manifest that in the present instance they unmistakably influence each other, even when gray predominates. The green in the gray of the trees, and the red in the gray of the housetop, will by contrast appear stronger than they really are.

There must be an adjustment in proportion to color as well as of form; values must not be lost, and a balance of color is essential to a perfect composition and harmony. What is technically known as "values" in a painting is the strength or proportion of color used to express certain objects, with the relative force of light and shade as it pertains to distance.

Remote objects are thus made to differentiate in form and color from those nearest the spectator. The relative value of light and shade is of more real importance than detail.

In landscape painting, lay in the first washes of color in broad masses with as much freedom of handling as the subject admits.

Reserve details for second firing; and possibly a third firing will be necessary, in order to accentuate and strengthen certain portions, and work it up to its final completeness.

A sunset sky, glowing with the brilliancy of rich, strong colors, may be easily depicted with *deep blue green*, *silver yellow*, and *deep red brown*.

A beginner had better paint this sort of sky for two or three firings. For the first, use the pale tint of blue at the top, gradually fading off to nothing near the horizon. Leave about one-quarter of the lower part of the sky white, and have it fired. This space is reserved for the red and yellow,

which may be put in with safety for the second firing.

If this precaution is not observed, it is highly probable a novice would get the blue and red and yellow mixed; and instead of clear, bright colors, they would become muddy, as these colors, if allowed to impinge in the blending, will inevitably lose their brilliancy and purity, and assume gray tones.

Apple green and *yellow for mixing* will contribute the light tones of green for spring and summer landscapes. *Stone emerald green, chrome green, brown green No. 6,* will give a large range of tints for darker foliage. The deepest accents may be put in with *dark green No. 7.*

Sepia is good for the local color of paths and roads. Some *neutral gray* may be added if sepia should prove too yellow.

Water is usually a reflection of sky tints, a trifle grayer if in large bodies. If a placid stream is flowing near or at the foot of trees, the water partakes of their color. It is quite impossible to give more minute directions that will cover so vast a field.

It would be advisable to have a good colored picture to copy, or, better still, Nature itself, and whatever color is indicated in the various parts, to use it without hesitation.

When familiar with the use of colors, it will be time enough to make purely imaginary pictures; and until this is arrived at, it is better to adhere to copying correct reproductions.

A mere suggestion of a landscape is sometimes seen as a background to figures or Cupids. Introduced in this way, they emphasize the foreground figures; but to do this the landscape must be kept subordinate, and rather pale delicate tints are employed, although a slight exaggeration of color is allowable. For instance, trees are often seen of a distinctly purple or violet tinge, but applied so delicately as not to appear obtrusive. If too vivid in color, tone down with gray. Details may be painted, but never strongly. When this treatment of a background is resorted to, it should be regarded in this light, and kept strictly within the limits of its decorative qualities.

FLOWERS

Flowers are usually the favorite subject for decoration.

First attempts should be confined to single flowers. By "single" is not meant one solitary flower; but the word is used in a botanical sense, to express those blossoms with but one row of petals. Better success follows if some simple little floral design is attempted, rather than some pretentious, complicated arrangement of such double flowers as roses and chrysanthemums.

A wide margin is allowed the amateur for selection; but such simpler flowers as yellow tulips, scarlet poppies, purple violets, white dogwood, pink wild roses, blue forget-me-nots, and purple and yellow pansies are best on which to commence. These are not suggested as though no skill were necessary to portray their special beauties,

but as offering less difficulties than some others, and usually giving the greatest satisfaction, and at the same time affording opportunity to use a variety of colors and manipulation. Tulips and poppies are painted with the two easiest colors to use. They require broad washes of color, and great freedom in handling of the brush. Pansies are always pleasing; and if the beginner does not succeed perfectly at first in obtaining the exact shade aimed at, this failure need not be proclaimed from the housetops. There are so many varieties of pansies, that almost any color would pass undisputed. Violets, wild roses, and forget-me-nots are prime favorites with beginners; and if they do fail to catch their refined and delicate beauty, if the endeavor to perceive it is present, and felt, these first efforts should be viewed with leniency if not with unqualified approval.

An amateur's first efforts usually give greater satisfaction than any subsequent work. Even the most glaring of faults are totally obscured to their partial vision, and the most palpable errors are bravely defended.

No one ever entirely forgets this first time he touches a brush. Nothing in after years quite equals this exciting hour.

The intense interest with which this first work proceeds; the care with which it is conveyed to

the kiln; the pardonable pride with which it is finally deposited in the care and to the mercy of the firer, and the reluctance of leaving it; the anxious hours of waiting till it is fired; the keen delight in going for it, mingled with the fear that "something has happened;" the thrill of pleasure of finally receiving it in good condition, and the complacency with which it is contemplated as a work of art, — is an experience most china-painters have gone through, even though many would scorn to admit it. This is indeed entirely as it should be. If defects and deficiencies were as perceptible to the amateur as to the professional, there would probably be lacking sufficient courage to continue.

Intelligent criticism, even though severe, should be gracefully, even thankfully, received, and duly appreciated rather than resented.

There is a vast difference between fulsome flattery and captious fault-finding. Both are detrimental, and are usually indulged in from some unworthy motive.

No one has any authority or justification to criticise who is not fully qualified to point out the remedy for every fault and failure. To point out a mistake is one thing; to show how to rectify it is another.

Honest criticism, kindly bestowed, is of inesti-

mable value; but hypercriticism, which is generally conferred gratuitously, circumvents its object, and may be disregarded.

Hesitate to invite criticism if there is danger of its proving unwelcome, and only appeal to those in whose opinion every confidence is assured in advance. This discursive digression is not so irrelevant as it may seem, and the writer feels justified in making it.

There are two generally accepted methods for amateurs by which floral designs may be painted with ease.

One is where the local color is applied in almost flat tints for the first firing. That is, if the flower be pink, pink alone is used, but in varying degrees of strength. The form and direction are both indicated, but without shading or gray tones, and with but little detail. Color is washed in rather broadly, but very delicately. It is then fired, and then modelled and finished with gray tones and any other touches of color it may require.

This is easy, because it preserves the drawing; and after firing, it is in excellent condition to finish.

Another way is just the contrary. The modelling is done first, entirely with gray tones, and no local color is applied until after firing.

Before firing, it resembles simply a design in gray; but the grays must be made with a reference

to the color to be used eventually. That is, if for pink or yellow flowers, the grays must correspond and harmonize with the pink or yellow that is to provide the local color.

After it is fired, color is washed on in clear tones, the deepest accents added, and then finished. Either plan may be adopted; the former, however, is more generally in use.

In no event must flowers be painted and finished with but one color, except in monochromes; but the shape, shadows, and rotundity — in short, the modelling — must be accomplished with gray tones. By the introduction of grays only can this effect be produced, and in no other way.

To paint a pink rose, for instance, with only pink, and in the shadows to use only more pink, would never do. It would be very bad, first, because it would fail utterly to express form, as all the subtle varieties of light and shade, cast shadows, reflected and transmitted lights, could not be delineated with pink alone; and next, if pink were applied thick enough to give an idea that shade was even intended to be so represented, it would probably blister in the firing, or, what would be equally disastrous, would require such a strong heat to develop as to ruin every other color.

No flower can be properly painted without grays.

Unless there has been a study made of flowers, either singly or in clusters or groups, it surprises us to see how very little local color may be used.

Perspective is equally as important in painting flowers as landscapes. If a bunch of pink roses be placed in a vase, and set in a strong north light or under a skylight, and viewed from a short distance, it will be observed that not more than one or two, perhaps, will receive the direct rays of light, and will be pink. If this fact is not perceptible, half close the eyes, and the truth of this statement will be at once realized. There will be delicate half-tones and shades and cast shadows, which are only represented by qualifying the local pink color with other tones.

Rotundity exists and must be expressed in painting a bunch of roses as well as an opaque sphere. In the latter case, it is plainly discernible and apparent, even to the most ignorant. But if not recognized as readily in a cluster of roses, it is still present, nevertheless; and it must be conceded and so represented.

White roses will even disclose this fact more perceptibly than pink ones. Although each separate rose is distinctly white by itself, it can only be so represented by gray tones. It must be thoroughly understood that "gray tones" does not mean black and white; that is, varying degrees of

black on a white surface. In the aforesaid cluster of white roses, for instance, no element of black must enter; only the softest and most delicate of grays. These may be cool grays or warm grays, but always gray.

Grays may be qualified by blue, green, pink, yellow, or violet. They all enter more or less in the painting of roses.

The lights only are in pure color. The highest lights are usually cool in quality, while reflected lights are always warm. Half-tones must have a tinge of that color that is complementary to the local color.

These suggestions are general, and by no means infallible; but are facts worth remembering when painting not only floral designs, but draperies, fruit, or anything where distinctive form and rotundity have to be expressed.

To the uneducated all pink flowers are pink; and it will seem rather strange not to paint a pink rose pink under all conditions of light, simply because it is pink. These people will scarcely credit the fact that when an artist wishes to paint a black horse on canvas, he seldom or never uses black paint; but it is none the less true.

If these apparently inconsistent statements disclose any new ideas for thought and study, they have not been made in vain.

Pink Flowers may be painted with *Carmine Nos. 1, 2,* and *3. Crimson lake* and *Japan rose* are sometimes preferred. *Superior English pink* and *rose* are other beautiful colors. There is but a slight variation in tint, and perhaps one may be more suitable for some designs than another. For general use, perhaps *carmine No. 1* is as good as any. But never hesitate to use either of those mentioned if preferred, or if it more nearly approaches the shade the design requires.

In using these colors, the secret of obtaining beautiful pink hues is to use them as thin as possible, — the thinner the better. There is no danger of getting the color on too thin, whereas unpleasant results follow if put on too thick. Pale color can be always deepened if, after firing, it be not dark enough.

Any of the colors mentioned will serve to paint roses, both wild and cultivated, peonies, carnation pinks, apple-blossoms, primroses, cyclamen, chrysanthemums, arbutus, azalias, morning-glories (convolvulus), fuchsias, hollyhocks, hawthorn, sweet peas, anemones, or any pink blossoms. These flowers differ somewhat in tint, and therefore should not all be painted exactly alike. When a deeper color is indicated, add a touch of a stronger color; and the addition of a little *ruby purple* for a very dark pink, as in the heart of a rose, is pref-

erable to piling on the carmines in the endeavor to secure the same effect.

Any color, if applied too heavily, will blister in firing, and chip off; whereas several successive washes of the same color, applied comparatively thin, will attain the same result, and with no danger of blistering. One wash of color should be allowed to dry before another is placed over it.

Too much thick oil in any color will also cause it to blister and bubble up in the firing.

Both of these accidents may be avoided.

When the work for the day is over, it should present a dull, dry appearance; but if any part of the painting still looks moist or glossy, and is not dry, the chances are that too much thick oil has been used.

But if the color is on very, very thin, the excess of oil will do no damage; it is only where the color is applied thick, that it forms a skin on top, prevents drying underneath, and consequently boils in the kiln.

The manipulation of the brush for flower-painting requires that the sweep of the brush should have a distinct direction. It must have the trend of each petal or leaf.

Take very little color on the end of the brush, and begin either in the heart of the flower or the outer edge; it is immaterial. But each petal must

be painted either from the centre outward, or from the outer edge towards the centre; never crosswise, or up and down, or all around, but with a distinct movement of the brush in the way it grows. This fact must be remembered in reference to leaves of flowers. The leaf of the tulip, or carnation pink, for example, is quite different from that of the primrose or cyclamen, consequently must have different treatment.

If the brush-marks are in evidence, but in the right direction, it is not so grave a fault as though they were contrariwise.

Every stroke of the brush must mean something, and should appeal to the beholder's intelligence and appreciation, if not of art, then of nature. The closed petal of a half-blown rose is usually painted darker on one side. To simulate this effect, take up color only on one side of the brush; the other side, moist only with lavender-oil, will receive a faint tinge of color, and with one sweep of the brush it will be found to have shaded itself. This knack, to give perfect satisfaction, must be practised till freedom is acquired in the handling. It is only one of the many little "tricks of the trade." A square shader is necessary for this; it would be impossible to accomplish it with a round painting brush.

The rolling edges of the petals may be taken

out with a clean brush; that is, the color is removed where it has encroached upon those portions where it is essential to be light.

Never allow the edges of any flowers to be perfectly straight. They will then look as if cut out of paper and pasted on, rather than painted. They frequently have crinkled edges and graceful curves; and these cannot be expressed with sharp, hard lines.

Conventionalized treatment does not enter into this scheme of instruction, as these directions are given for delineating nature. Conventional and semi-conventional designs have their place in decoration.

Flowers so treated are frequently outlined; indeed, it is a recognized characteristic. This gives very definite form, and is strikingly effective, especially in bold designs, but is chiefly objectionable as being foreign to nature; and while art is not a servile copy of nature, it should approximate it sufficiently to be understood.

All flowers are capable of being conventionally treated, and there is nothing to prevent its being done very acceptably.

Flat washes of color are employed, and the design outlined. This outlining must be of uniform thickness and color, — a clear, clean, definite line. No hesitating or wavering lines are permissible, —

thick in some places, thin in others, dark here and light there; but the outline must be symmetrical in proportions, and usually of a much darker color than the design itself. It may be done either with a finely pointed brush or a pen. This gives strength and force; and this style of painting has, and always will have, its advocates.

It is impossible, however, to dwell further upon conventional ornament. It scarcely comes within the scope of this *Manual;* for in itself it is a vast study, and already many volumes have been written upon the subject.

Blue flowers, such as forget-me-nots, lobelia, myrtle, bluebells, etc., may be painted with *deep blue green.* The cornflower requires a very much darker blue, except for the highest lights. There is a color made with special reference to this flower, called *cornflower blue.* In lieu of this, *deep blue* will answer. The buds of forget-me-nots have a decided pinkish tinge, and must have additional touches of *carmine No. 1* to represent it. The cornflower has also a tinge of red or purplish reflections, that are best made with a little *deep purple.*

Silver yellow furnishes the yellow centre of a forget-me-not, but the blue must be carefully removed first. Add a little *violet of iron* to *deep blue green* for those in shadow and most distant,

and the same, only very pale, for the vague and indistinct flowers fading away in the background.

The green leaves of blue flowers may be very yellow, and considerable *yellow for mixing* may be added to the greens used. Blue flowers seem to require plenty of warmth surrounding them, and yellows and browns are preferable to cool greens. Blue is such a cool color in itself that it is not pleasing without being balanced with the other primary colors.

Shade the greens with *olive green* or *brown green No. 6.* These are both warm greens.

Yellow flowers, like sweetbrier, roses, golden-rod, primroses, sunflowers, pansies, daisies, dandelions, chrysanthemums, coreopsis, buttercups, jonquils, or daffodils, can all be painted with *silver yellow* for the local color.

Silver yellow, in its full strength, is very rich and brilliant, and is capable of producing a delightful range of tints, in thinner washes. *Orange yellow* may be added to strengthen deep tones, or *yellow brown* may be used with good effect.

Yellows may be shaded very satisfactorily with *brown green No. 6*, but it must be used delicately. For pale yellow flowers, blue and *best orange* are recommended. *Yellow brown* and *deep red brown* are often seen on yellow flowers, — the former in the deep shadows, the latter in the heart of the

flower, and in the transmitted light. Sometimes a touch of *deep red brown* on a few of the outer petals is very effective.

Brilliant red flowers, as the poppy, cactus, hibiscus, salvia (scarlet sage), and some berries, as the holly, are best painted with *capucine red* for the brightest parts, if a very vivid coloring is desired; *deep red brown* will be found to be red enough for nearly all purposes. This color is easily modified for dark tints by *violet of iron.*

There is nothing among the mineral colors that is exactly an equivalent to scarlet or vermilion; but the close proximity to a vivid green — in the leaf — will raise or heighten the color very considerably, and it will unquestionably appear very bright indeed.

Distant red flowers may be very faithfully represented by *violet of iron;* and if a trifle of *deep red brown* be added, an intermediate tone is produced.

Purple flowers, such as violets, pansies, lilacs, the iris or fleur-de-lis, clematis, anemones, sweet-pea, passion-flowers, morning-glories, thistle, clover, and wistaria, are to be painted with *light violet of gold* and *dark violet of gold.* With the former, if modified with *carmine No. 1,* and the latter, if qualified with *deep blue green,* every shade of lilac, violet, and purple may be obtained.

A variety is even desirable when painting a

group of any one of these mentioned flowers. A lovely new color, called *pansy*, is a deep, full, rich purple, somewhat darker and bluer than *deep violet of gold*. *Shading green* may be added in shading to good advantage. The two *violets of gold* are very satisfying colors when fired, although a little difficult to apply at first in flat, smooth tints, but quite indispensable. Suppress any desire to lay these colors on heavy for very deep tints; by repainting and refiring, though, a very full, rich color can be obtained. These are colors that require considerable fat oil, and will surely blister in the firing unless laid on thin.

If the pansy is a combination of purple and yellow, and the yellow petals have purple markings in the centre, the yellow should be erased before *violet of gold* is applied; otherwise it would lose its rich and brilliant color.

This erasing of color is done by a steel eraser, as illustrated on page 93, or by using a short brush just slightly moistened with turpentine, and wiping off the color. If the brush is too wet, an ugly blot will be made. The turpentine spreads, and pushes the color before it.

Clove-oil does not seem to possess this vexatious property to such an extent as either turpentine or lavender-oil. The sharpened point of the brush-handle or other stick, if moistened between the

lips, will clean off color beautifully, if used before the color has been allowed to dry.

Crimson flowers, like roses, peonies, carnation pinks, etc., are a little difficult for the amateur. *Ruby purple* is the only color that approximates the crimson color of these flowers; and, royal color though it is, it does not always serve the purpose; it is not always true to nature. For some flowers it is too bright; and for others, again, it is not bright enough. For the first fault, the remedy is simple enough, as the color can easily be toned down; but it is not so easy to key it up to every shade that may be required.

A very beautiful bright tint may be had by using *ruby purple* first, and firing very hard, then giving a thin wash of *deep red brown*, and firing lighter. This will produce a good result, one which could not be obtained if the two colors were mixed before applying.

A great deal of rubbish has been written and spoken against using gold and iron colors together on the same design. The caution is based upon utter fallacy; the colors may be used in the manner specified with absolute freedom and liberty.

Carmine applied first, and fired hard, may have a thin wash of *carnation No. 1*, and fired light, with charming effect. While an indiscriminate mixing of colors is to be at all times avoided, there is

nothing to prevent washing any one color over another, provided the necessity is felt.

If a green is felt to be too vivid, and the consciousness exists that it requires toning down, that a wash of *carmine*, *violet of iron*, or *brown* would materially improve it, there is no reason why it should not be used. If not bright enough, a wash of yellow or a yellow brown will restore it. No serious consequence will happen, and greater harmony will frequently result. There is no better teacher than individual feeling, for color; and if the feeling is there, the inclination is to follow it. In such matters one's intuition is to be trusted. *Crimson purple* is not so brilliant as *ruby;* and *deep purple* and *deep purple No. 2* are excellent colors for shading and deepening the other colors.

Half ruby and half carmine No. 1 make an excellent local tint for first firing.

Flowers may be painted with the same freedom where both red and yellow are employed. Tulips, nasturtiums, carnation pinks, autumn leaves, chrysanthemums, trumpet-vine, etc., are all variegated combinations of red and yellow. *Carnation No. 1*, mixed with *ivory yellow* and *yellow for mixing*, in equal portions, gives beautiful soft salmon and shrimp pink tints. This shade is for woodbine or honeysuckle, and also for some rose tints. *Deep red brown* and *silver yellow* will do the same.

It is understood that where a red or yellow is to be preserved in all the purity of its strength, it should be placed directly on the white china, and not mixed. Every color added to another influences it in direct proportion to the quantity introduced. An excess of yellow, especially *yellow for mixing*, will be frequently found to have totally destroyed every trace of red, having devoured it in the kiln. Professional decorators say of such cases, that "the color has gone up the chimney."

Yellow tulips with red stripes may be painted with yellow and red alternately, and softly blended with a clean brush moistened with oil. There should be no hard line where one color leaves off and the other begins, but the colors must imperceptibly merge and blend into each other.

There are many designs in brown that are exceedingly pretty. These consist of acorns, mushrooms, chestnuts, wheat, rye, button-balls, autumn leaves, Norway spruce, red cedar, and pitch-pine burrs and spines, and others.

They form a series of quiet, unobtrusive decorations, that are in reality quite conspicuous from the absence of brilliant coloring.

But few colors are necessary to portray any of those mentioned — the lightest tones to be applied first, and the darker ones gradually added. *Yellow ochre*, *sepia*, or *light brown* will supply pale tints;

yellow brown, *chestnut brown*, warmer tones; and *brown No. 3*, *brown No. 4*, and *black brown* the darkest that will be needed. *Vandyke* brown will supply desirable rich, warm tones.

These brown designs look especially well on yellow or blue grounds, and even a slight flush of any other color; green, violet, or pink will be harmonious, brown being viewed almost as a neutral tint, as it never conflicts with bright colors.

White flowers, being the most difficult to paint, have been left till the last. Among those most frequently painted are roses, daisies, lilies, snow balls, narcissus, hawthorn, clover, azaleas, chrysanthemums, Cherokee roses, magnolias, dandelion seed, wild carrot, primroses, morning-glories, pelargoniums, carnation pinks, and cherry-blossoms.

One of the first problems the beginner encounters is the difficulty of painting white flowers on white china. A good plan is first to secure a correct drawing, and to begin by painting all around it.

For example, suppose the design is two or three white roses in close contact, and a few tight and half-blown buds trailing off in a graceful fashion from the roses. The roses may have a slight flush of color around them, or be surrounded by a mass of leaves. Either will relieve the situation at once.

The white china serves as the local color, and the modelling must be carefully done with pale

washes of delicate gray tones. These increase in warmth towards the centre of the rose; and green and yellow, and sometimes light tinges of red, are distinctly visible in the heart of a double white rose.

The lights and shadows and species of flower will indicate which colors to employ, and where the warm and cool shades of gray properly belong.

White daisies may be painted in with some delicate gray tint, *warm gray* being preferable, as it supplies such soft, warm tones of gray. Afterwards the high lights may be added with white enamel. Snowballs require considerable green in modelling, and this may be qualified with *warm gray* or *yellow ochre* for the half-tones and reflected lights. Hawthorn admits of touches of *carmine*, and even *ruby* in some instances. Dandelion seeds are modelled in greenish gray, and finished with tiny dots of white enamel.

This is best applied by using a small blender brush, and rubbing into the enamel, which must not be too thin nor too thick; but by pressing so as to separate and spread the hairs a trifle, and then lightly touching the dandelion puff, it will be seen that a tiny speck of enamel clings to each hair, and in no other way can this delicate treatment be effected.

This same manner of applying enamel may be used for button-balls, chestnut-burrs, or any rough surface where it is desirable to have these minute lightest points of light expressed by enamel.

Beyond giving these few general directions, it is quite impossible to go further into detail. It is deemed of more value to give general treatment to cover many cases, and of more real advantage and assistance to help the student to rely on himself for details, than to enter too minutely into one design. The aim throughout this *Manual* is to show the way, and teach the amateur to depend upon himself and his judgment, and to put his observation faculties into practice.

There can be no hard and fast rules laid down, however; and a beginner should always, if not painting from nature or his own previous studies from natural flowers, secure good colored models from which to copy. When more proficient, a black-and-white study will be all that is necessary.

Having an artistic study to copy, it is an easy matter to select the necessary colors. There need be no hesitancy in using whatever colors are indicated. If a pink seems tinged with yellow, give the pink a wash of yellow; which yellow is a question for individual judgment to decide. If it is a distinct yellow, perhaps *ivory yellow* or *silver yellow* will be the correct shade. If lower in tone,

and not so yellow, but with a leaning towards a fawn or brownish tinge, use *best orange* or *yellow ochre*, or *chestnut brown*. When green is visible on a white flower, it is usually a very yellow green ; therefore add *yellow for mixing* to either *apple green, stone emerald green*, or *moss green J*, till the proper tone is gained.

The general treatment adopted by flower painters is to paint without detail for first firing. Whatever color is used, it must be applied very thin, to obtain a pale shade. More color is added for the second firing. After washing in the most prominent flowers, or part of the design, with the pure color, add gray for those surrounding flowers and leaves which serve as a background, and represent the vague, distant effects. These must be very delicately done, with just sufficient color on the brush to show. Very little will be distinctly visible on white china, and too little cannot be used for the first firing.

Of course if this were to remain so, it would be a weak representation ; but all the strength the subject requires may be added subsequently. But it is infinitely better to obtain and hold the values at the very first painting, than to trust to luck or any other haphazard method. Having secured the proper values and modelling, the rest of the work will progress finely. But too great stress cannot

be placed upon these two important factors in all painting.

After the first firing, and before commencing to work on the actual design, is the time to give the china some tint of color for a background.

This is usually some color harmonious, even though a contrasting color, to the general color scheme. For instance, *silver yellow* is a happy color for violets. *Russian green* looks well with pink flowers, *carnation* with white flowers, and *chestnut brown* with blue flowers. *Ivory yellow* and *chestnut brown*, used very thin, are good useful colors for this delicate flushing, as they harmonize with any color.

Perhaps the theory of color is not sufficiently understood by the average amateur to enable him to know exactly what color, and just what hue and tint, to employ in connection with another color to secure harmony, and obtain the best results.

While the subject of color is too vast to present in a few words, a brief presentation of some important facts may be of value to the student. It sometimes happens that a decoration wholly misses an effect because of the lack of information as to what the color scheme requires to bring out its full beauty. A touch of color placed intelligently will completely change the entire appearance by altering the relative values of those employed.

Briefly, then, harmony of colors is an even distribution, or more properly a balance, of the three primary colors. Red, blue, and yellow are called primaries, or primitive colors, because they cannot be produced by the mixing of any other colors; and on general principles no color scheme is perfect in conception or composition where the absence of one of these colors is actually, or felt to be, wanting either in its natural state or in combination.

This statement must not be misconstrued to mean that an equal space on a given surface must be covered by each of these three colors, as this would be far from correct; for in reality to appear equal, blue must predominate to a very considerable extent. This, however, does not necessarily mean the use of pure color, the primary blue, as it also appears in green and purple.

These two colors and orange are called secondary colors, and are a combination of two of the primary colors, the remaining primary being its complementary color. The tertiary colors are formed from a combination of two secondaries.

Two colors containing one color in common, green or purple for instance, both having more or less blue, will, by contact, lose in the intensity of the common color, and become weak. Therefore, more blue is required in both colors to appear

as they would appear apart from each other. Harmony can be produced by contrast as well as by analogy ; blue and orange is a contrast, but it is also harmonious when about equal. Every color in juxtaposition to another has a tendency to tinge the other color with its complementary. Place blue and red together, and the blue will assume a greenish tinge, and the red a yellowish tone.

In the science of optics, and in all experiments with the prismatic spectrum, blue predominates, red comes next, and yellow least. This law is exemplified in nature, for the blue of the sky covers an area larger than any one other color in an unobstructed space.

To be more explicit, the primary colors, if used in this proportion, blue eight, red five, and yellow three, will harmonize or neutralize each other. To prevent the predominance of the other colors, there must be an amount of blue equal to the quantity of red and yellow together ; this makes a perfect equilibrium of color. A cursory glance at Mooresque ornament proves that the Moors thoroughly understood this.

A little pink — which is a variation or a tone of red — in conjunction with blue is very pleasing, when the blue is considerably in excess. When the pink prevails, it is ineffective and commonplace. Since blue exists in more or less intensity

in two of the secondaries and three of the tertiaries, its presence is readily recognized and felt, should part of its proportion appear in this guise.

In the arranging of colors, the primary colors hold the top or uppermost place. The secondary colors come next, that is, in the intermediate plane; and the tertiary colors are the lowest. Nature is a prominent exponent of this law, for we have the (primary) blue above all in the heavens, the (secondary) green coming next in the trees and verdure, and the (tertiary) russet tints in the earth at our feet.

It is also repeated in all flowering plants. The primary color is to be found in the buds and blossoms, at the top or extremities of branches; the green foliage comes next; and the olive or russet in the lower part, the old leaves and stems and stalks.

When a primary (yellow) is tinged with another primary (blue) to be contrasted with a secondary (purple), the secondary should assume a hue of the third primary (red); therefore a greenish yellow requires a reddish purple, and an orange red a bluish green, and a bluish purple must take a yellow green.

Variations of a color are called hues, and the different intensities are tints. There are various hues of blue; there are greenish blues and purplish blues, for instance; and there are many tints in a

sepia monochrome, but no hues. Hues, therefore, are obtained by the admixture with other colors. Tones are produced by adding white, shades by adding black.

Whatever color is used, it should be slightly fluxed, unless it be a grounding-color.

Take a tinting-brush, and but little color, and let it go all over the distant flowers and leaves, and fade away at the edges to nothing.

This tint is to be blended or padded till it is uniform, so that it is scarcely perceptible where it begins or leaves off.

Sometimes two colors are thus introduced with a good effect. *Silver yellow* on one side may join *deep red brown* on another; but one color must blend or merge into the other very gradually and softly. *Deep blue green*, or even *Russian green*, and a tinge of *carnation No. 1*, is another combination that is pretty.

Sometimes the same color as that of the local tint of the flower is repeated with good effect.

This is especially fine if the article of china is large enough to admit of this repeated color being used to paint a scroll design; in order, as it were, to balance the color.

This design of simple color is most effective in conjunction with white enamel or gold, either raised or flat. This, in turn, should be applied in

graceful, thin lines of curves and scrolls and dots, as a finish to the scroll design in color.

This sort of decoration is practically unlimited ; and there is sufficient scope for the exercise of much taste, judgment, originality, grace, and individuality.

Whatever color is used to give additional beauty and effect, or warmth and harmony, it achieves this end better by being allowed to extend over all the decoration except the most prominent and principal flowers.

This glazing process gives a wonderfully harmonizing effect, but strong color cannot be so used. It would change the undertone and original intention if anything but a delicate wash, just a flush of color, were used.

This will soften and unite with the local coloring with an exceedingly beautiful result ; and, without changing the color, it mellows it to harmonize and correspond with the surrounding tint.

Beyond the accompanying foliage, green is not as frequently used as other colors.

One of the favorite green decorations consists of the hop-vine. It is graceful, and easily arranged and painted. Another one partakes of the nature of ferns, of which the maidenhair variety is the most popular. Grasses may also be introduced with effect in very many articles.

The greens thus used should harmonize, and two, or, at most, three, need be used. Various tints can be produced with one green and *yellow for mixing*, and *best orange* or a brown. *Brown green No. 6* is always in harmony with the greens.

A few tiny red berries, at irregular intervals, scattered among the ferns or grasses, relieves the monotony of green, and enlivens and lights up the whole decoration. Discrimination must be exercised as to the size and quantity; for, from the nature of the color, — red, — they will prove conspicuous, even when small and far between.

Mignonette is a lovely, though a somewhat difficult, flower to paint. It is, however, done with two or three greens, yellow greens, and the red touches are *deep red brown*.

Leaves are usually considered difficult for the amateur to paint; and he will frequently fail here, even after having gained an insight into the painting of the flower.

The cause of failure may be attributed to several reasons; notably, too great a similarity one with another, not enough variety in the color, too much color, and an utter disregard of the direction a leaf should be painted.

Rose-leaves afford an infinite variety in their treatment, and a happy diversity is aimed at for pleasing results. Some are quite yellow green,

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some are a strong bright green, others again are olive and have brown largely in evidence. The backs of some are bluish gray, others a pinkish gray. In some of the tender shoots *ruby* is decidedly seen, and also on the extreme points of older leaves. Leaves should be painted rather delicately for the first firing, even for those eventually intended to be made dark, as there is generally a light portion visible.

Dip the brush in the color, and begin by painting one-half of the leaf from the central vein. Let the brush follow imaginary veins. Use *apple green* and *yellow for mixing* in any desired proportion to begin with, but do not paint the entire leaf with this one tint. If that portion of a leaf on the right side of the centre is bluish, as it might be if in a strong light, gradually add a yellow green, and next a darker green, and perhaps on the extreme edge an olive or brownish tinge is required. The other half of the leaf, that is, on the left of the depression through the middle, is somewhat darker than on the right side, and possibly graduated to quite a yellow green on the end.

It is somewhat difficult to give clearer, or, in fact, any definite directions for painting leaves. There is an infinite variety in shape, size, and color; and while some helpful hints may be offered, no cast-iron rules can be laid down.

China-painting cannot be taught entirely by verbal or written directions. Recipes may be given for making cake, but not for painting china.

The best method of learning to paint leaves, flowers, or anything else, and, in fact, the only right way, is to study them. Study them from every point of view. Observe them singly and in groups. Not only once or twice, but hundreds of times. Not only for a week or a month, but for years.

Study the relative value of light and shade, always of more importance than detail; not that detail can be disregarded, but it is not of primary consideration, and comparative correctness is. Absolute accuracy will follow relative exactness naturally in due course of time.

Those best depict the human figure who have studied the human frame and its anatomy. Flowers and leaves have also a frame and an anatomy. Botany will assist in acquiring an intimate knowledge of them, and to know how to paint them they must be understood.

No one can paint flowers successfully who does not love them. First love, then study, and then paint them.

Flowers must be painted so that, in their refined and exquisite loveliness, they appeal to more than one sense. Their exceeding delicacy must be felt,

their natural grace and beauty must be seen, and even their fragrance recognized.

A superficial knowledge will never accomplish this ; nothing but indefatigable study, and a prolonged, earnest endeavor. These are wholesome truths ; but the fact is, no art or science was ever acquired without a serious and well-sustained effort.

When painting what is termed a " Dresden style " of decoration, which consists of tiny flowers scattered at irregular intervals, without much method beyond a fair powdering of blossoms, much of the modelling with gray is omitted. These garlands and clusters and single blossoms sometimes consist of the same flower, and are then painted in one color or two colors. For instance, violets may be chosen, and the surface of the article be liberally sprinkled with violets, either single blossoms or in groups of two, three, four, or five, showing the flower in every possible position and light.

Then, again, a variety of flowers may be chosen ; and pansies, tulips, roses, and others may be seen on the same piece of china. These are usually finished with but little variation in shading. Bright colors prevail, and the general characteristics are preserved ; but the absence of gray tone is noticeable, the forms being retained with light and dark shades of some color which should be strongly contrasted. In this kind of decoration, which is

exceedingly delicate and dainty, but entirely divested of real art, one should study the methods adopted by the genuine Dresden works.

Commonplace to a certain extent, yet it may be made to be very beautiful and attractive; and from its variety of brilliant color and the numerous subjects selected for the design, it is singularly pleasing to the majority of people.

Without requiring much mental or physical labor, lovely results follow. Decorating in the "Dresden style" makes no serious demands on one's ability or experience, and, furthermore, can be quickly accomplished. These considerations are not apt to be forgotten.

TINTING AND GROUND-LAYING

There are two methods of covering china with a solid color, either of a uniform or graduated tint.

One is called tinting, and the color is applied wet; that is, it is mixed with thick oil, turpentine, and lavender or clove oil. The latter is preferable if a large surface is to be covered.

The color, after having sufficient thick oil incorporated with it to make it pliable and manageable, is then diluted with lavender-oil till it is of proper consistency to apply in order to obtain the desired shade. The more oil of lavender, the lighter will be the color, and the more time will it allow of being blended to a uniform tint.

A large brush is used, the color laid on as quickly as possible, to prevent its drying unequally, and long, rapid strokes are necessary.

It will by no means present a smooth, even tint

until it is made so by the dexterous use of a blender; but this inequality of tint need not distress any one, as the blender, be it a brush or pad, will soften out all previous brush-marks, and smooth it beautifully even. It will also remove more or less color, for which an allowance should be made.

Graduated tints are produced by applying the same color in different degrees or depths of tint.

Another method, whereby stronger effects are obtained, is where two, or perhaps more, colors are introduced in their several successive shades, and blending to form a graduated effect. For instance, *silver yellow*, *yellow brown*, and *brown No. 3* and *brown No. 4* will furnish a fine range of graduated tints, from a pale yellow, through a series of intermediate tones, to a deep, dark brown. There is a wide margin for individual selection, and varying degrees of intensity are easily obtained.

Carnation, *deep red brown*, and *violet of iron*, or *Vandyke brown*, is another good combination.

Yellow for mixing, and *stone emerald green*, *olive green*, *brown green*, *shading green*, and *green No. 7* will form a chromatic scale of greens.

Moss green J at top of a cup, and *light violet of gold* or *carmine* at the bottom, is another blending of tints sometimes seen. So also is *deep blue green* and *carmine*.

To be able to blend one color into another without injuring either tint will be found useful in the painting of flowers, fruit, fish, sunset skies, and be serviceable in many other instances aside from tinting.

Tinting is in itself comparatively an easy task. No special skill is required, beyond a certain knack in the handling. It is never a very artistic performance, though frequently a necessary one; and a certain dexterity is decidedly of advantage.

Ground-laying is where the color is dusted on, being applied while in the form of a dry powder, on a previously prepared surface. There is a special vehicle or medium for this purpose, called "grounding-oil." It is a thick, heavy, varnish-like substance; and although possessing a dark brown color in even a small body, when diluted with turpentine, ready for use, so little is apparent that it generally has to have a trifle of lampblack added, in order to see when it has been equally distributed over the surface to be tinted. The lampblack burns away.

Pour a little of the grounding-oil in a saucer, and add enough turpentine to allow free and easy manipulation. Without turpentine it would be rather troublesome to manage, as it has a sticky body. The paler the tint is to be, the more turpentine is to be added.

When all is in readiness, with a flat brush paint the china with the prepared grounding-oil. No special haste is required, but it must be applied smoothly and evenly.

To be certain of obtaining a uniformity in the distribution of this oil, use a pad to blend with, and the advantage of previously coloring the oil with lampblack is immediately perceptible.

If this oil be uneven, and thicker in some places than in others, the color will appear uneven when fired.

When a perfectly smooth, even surface is presented, set the article aside for a while, until it becomes in a "tacky" condition. When it reaches this state, do not be tempted to touch it ; it will surely leave a defect.

At the time of applying this grounding-oil, apply some also on a separate piece of china, which can repeatedly be touched, till assured it is in proper condition to dust the color on. This sometimes requires five or ten minutes, sometimes several hours. It depends on the state of the oil, the amount and condition of the turpentine, and the atmospheric conditions. When it has become dry enough to be just right to receive the color, it will not make the color moist nor damp.

Have the color out loose on a china tile or plate, and with a ball or wad of fine raw cotton, dip into

it, and lift it from the tile or plate, and very lightly apply, by letting it fall where it has been prepared to receive it. Sufficient will adhere to produce the desired result, and no more. The superfluous powder may be lightly brushed or blown off.

In applying the color to the china with the cotton charged with color, care must be taken that no part of the cotton touches the china without the intervening powder. Contact would mar the effect. Neither must color be rubbed on. It must be applied by the lightest touch imaginable, and with a slight rotary motion of the cotton keep the color well in front of it. After it is entirely covered, gently dust off the superfluous color with a flat camel's-hair brush. After this is accomplished satisfactorily, set the article so decorated aside, beyond the possibility of mishap. It takes some time to become dry and hard, and during this time is liable to be injured by the slightest contact. These accidents are irreparable.

Tinting by this means has several advantages over the moist tinting. The full depth of the color can be gained in one firing; and since it requires some little time to dry, designs can be cleaned out very easily. For instance, a part of a plate may be so tinted, with a scroll extending irregularly across one-half of it. It is then quite an easy matter to continue the design directly across this bit of

color, as the color is very readily removed. A piece of cotton wrapped firmly around the point of a stick will clean off every trace of color thoroughly. Color so applied can be graduated in tint by adding more turpentine where the color is to decrease in strength.

A complete list of colors prepared especially for tinting and ground-laying can be seen by referring to the color pages. These are all used for this purpose except the last, *permanent yellow*, which is a relief color; that is, it is used to simulate the stamens, as seen in the centre of wild roses, and so forth. These grounding-colors are well fluxed, and will glaze if applied only in a thin wash; but if painting colors are substituted, they require additional fluxing, if they are to be applied very thin as a tint. *Gold bud* is a strong, brilliant color. *Celadon* and *maize* are prime favorites. *Isabella* and *Chinese yellow* are useful, as their colors are not too pronounced to conflict with any other color.

Coral red should pay but one visit to the kiln.

HEADS, FIGURES, CUPIDS

Figure-painting is the highest branch of art. Very many who can acquire the art of painting flowers on china, and can accomplish various other decorations quite acceptably, fail utterly when attempting a head, especially if it be a portrait.

It requires special adaptability. This includes, primarily, aptness, then training, and finally experience.

It is by no means an easy task.

The first, and probably the most important, thing to do, before applying color, is to secure an absolutely correct drawing on the china. It should be done with india ink, very delicately, and should be strictly accurate in every particular.

If this drawing is not perfect in each and every detail, the painting will be a failure.

Faultless outlines furnish the key-note of the subsequent work; and if this essential feature cannot be an assured fact in advance of color, figure-work should be left severely alone.

A careless drawing or tracing invariably results in irretrievable failure, unless one has had sufficient experience and training to know exactly how to correct errors in drawing.

This ability requires not only skilful drawing and cultivated perceptive faculties, but a knowledge of anatomy. But how few who paint china are willing to go through a systematic course of serious study of the human figure, and become familiar with muscles, joints, bones, etc., before attempting to paint! Those who are indifferent to the advantages derived from previous preparation, usually turn out indifferent work, and fancy that others are just as oblivious to imperfections as themselves. Now, while ignorance is to be deplored as a misfortune rather than a fault, there exists no reasonable, nor even possible, excuse for cultivating it; and surely those who persist in perpetuating deformities and malformations on china, not only ostentatiously exhibit their ignorance, but at the same time expose their egotism to an unwarrantable degree.

It is to labor under a very serious mistake to repudiate the first principles of art and laws of nature, the culminating point of which is reached in the vain idea that it passes unobserved if censure and criticism are withheld.

If these same efforts were with equal energy directed in a better channel and more worthy cause, it would eventually prove a more profitable investment. No one ever regretted time and labor bestowed in serious study. Those who excuse themselves from this, from whatever motive, are culpably negligent in cultivating any latent talent they may possess.

Little chubby Cupids and cherubs, in whatever attitude or occupation they are depicted, are invariably a source of admiration, and form a pleasing ornament for almost every article of china.

Carefully drawn and painted, they are truly a delightful decoration, and are universally a favorite and appropriate design.

But alas! the monstrosities too often seen are anything but a pleasure to behold.

Their involuntary infirmities are so manifest that the revelation rather excites sympathy and commiseration than pleasure. Nor is this pity restricted to the grotesque little creatures; but it is extended to where it rightfully belongs, — their creators.

Poor little knock-kneed, cross-eyed, bloated, and dropsical specimens! Generally utterly divested of every vestige of bone, muscle, and joints, and stuffed with cotton instead.

Fingers and toes are recklessly added or omitted — a few more or less apparently a matter of no consequence — and with an utter disregard to any regularity as to size, shape, and proportion.

And as though these deformities were not sufficiently harrowing, another torture is usually inflicted, — that of compelling these little parboiled creatures to wear wigs! The most superficial examination reveals this fact.

Handicapped with all these disfigurements, these freaks continue to thrive and multiply, and are offered for admiration, for exhibition, for sale; and adverse criticism is resented by the perpetrators as a personal offence.

This severe criticism, by no means without ample justification, is given to demonstrate the necessity of the extreme caution and accuracy required in obtaining a correct drawing in advance of painting Cupids, or any human form.

It is immaterial by what method this end is attained, whether by freehand drawing, or tracing, but it is imperative. After the drawing, the next thing is the preparation of the palette.

While asserting no superiority in the method of

mixing and applying flesh tints herewith given over those of others, it is claimed to be thoroughly reliable, and, after many years' experience and tests, has invariably given satisfactory results.

It is not difficult of comprehension, is easily applied, and its absence of any complicated features justifies its recommendation to beginners. This does not militate in the slightest degree against others arriving at same results by different means.

In selecting a subject to commence on, it is advisable to obtain a good colored study, rather than a black-and-white picture, from which to work.

By following the directions, however, it will be just as easy ultimately to work from a simple outline as a shaded picture; but at first it would be better to become familiar with the treatment by having an excellent colored picture to copy. It will afterwards be comparatively easy to utilize a black-and-white study or photograph as a model, knowing well where the separate shades belong.

A profile is rather an easier subject than a full face, and it is advisable not to commence on a small head. One about three or four inches in length will teach the manipulation better than a very small one.

It is a mistake to suppose a very small head is

easy to paint on account of its size, or that the smaller the head the less the amount of labor to be bestowed upon it. While to a limited extent this may be true, the large head admits of greater freedom in handling, and breadth in treatment of detail; and this freedom could never be acquired if efforts were entirely confined to wee, small faces. While, on the contrary, a perfect familiarity in the painting of a large head is most valuable assistance in the painting of a miniature.

Another note of warning must be sounded. As a first experiment, avoid a portrait or any well-known subject. The variation of a hair's breadth is fatal to the first, and the most insignificant change becomes pronounced and prominent by comparison if a hackneyed subject be imperfectly portrayed. A simple fancy or ideal head, one devoid of complicated accessories in the way of draperies, is preferable to any other on which to begin.

The colors necessary for flesh are *carnation No. 1, ivory yellow, yellow for mixing, deep blue green, violet of iron, brown M., or 108, sky blue, pearl gray, yellow brown, warm gray, gray No. 2, neutral gray,* and *flux.* Their preparation consists in producing by their combination a local flesh color, a warm shadow tint, and a cool shadow tint.

First, squeeze out a very small quantity of *car-*

nation, and add to it about one-third *flux* and a drop or two of fat oil. Dip the end of the palette knife in the lavender, and with what oil clings to it rub and thoroughly mix these two ingredients. Then divide and place one-half at the top of the tile; this is for lips, cheeks, and, if a Cupid is to be painted, all extremities, like fingers, toes, elbows, knees, which generally take on a rosy hue.

To the balance add an equal quantity of *ivory yellow* and *yellow for mixing.* While it might make no difference in subsequent results if inadvertently too great a proportion of *ivory yellow* were used, it would very materially change matters if an excess of *yellow for mixing* were allowed.

It is well to be careful, and to avoid dangerous consequences; err on the safe side by having too little rather than too much *yellow for mixing* when adding it to red.

With a little lavender, thoroughly incorporate these three colors into one tint, — that of the local flesh color. Place this beside the fluxed carnation.

Next make the warm shadow tint by mixing in the same manner equal portions of *deep blue green, violet of iron,* and *brown M., or 108.*

Then take equal portions of *sky blue* and *pearl gray* to make the cool shadow tint.

With these as a foundation, and judicious mix-

ing, any complexion may be represented, and any subject painted, irrespective of the particular light and shadow in which it is seen.

A man's face is usually painted stronger in color than a woman's; and a Cupid's is more pink than either, and has a larger proportion of carnation in its composition.

With a large brush and the least possible color go rapidly over the entire face. All irregularities in color and brush-marks are easily obliterated by blending; use first a brush and then a pad.

It must be a pale, delicate, uniform tint, but must not be padded till dry, as the modelling must be done before it dries, or it cannot be done at all without considerable trouble and some experience in dealing with this difficulty. It will save much time, labor, and subsequent disappointment, if it becomes too dry to continue, to wipe this first wash off entirely and begin anew, after adding more lavender-oil.

In order to satisfactorily accomplish the modelling, — that is, to blend into this laid local flesh tint the shadow tints where they belong in broad masses, — the color must be kept "open," and oil is the only medium.

Too much oil is as bad as not enough, as it will accumulate unsightly specks of dust before drying. Two or three failures will abundantly exemplify

these errors, and will prove of more real advantage than a dozen printed pages.

Knowing the cause of failures, it is easy to avoid them in future. To possess a realizing sense of the original source of the trouble is equivalent to rectifying it.

While this local flesh tint is still in good condition, with a small blender brush slightly tinged with the pure carnation (fluxed), blend in the additional color on the cheeks, with just a suspicion on the chin, and the lobe of the ear if visible.

This must be accomplished quickly and nicely. Use but little color, and that little where it belongs, and not over the entire cheek. It must fade away imperceptibly into the local flesh color. Then, with a similar brush rubbed into the warm shadow tint, apply wherever indicated in broad masses; and between this and the local flesh color, and applied in the same manner, comes the intermediary tone, the cool shadow tint, that is to unite them into one gradually deepened shadow.

This cool shadow tint is also used on the temples and at the roots of the hair on the forehead, on the receding surface of the nose, and to model the chin.

It is almost impossible to go further into details on a purely imaginary head, and at the same time be sufficiently general to cover other cases.

The dark shadow must never extend to the edge of that side of the face in shadow. Rotundity can only be expressed by the introduction of a half-tone reflected light. It is, indeed, the same principle that is so easily demonstrated in any opaque, spherical object, if placed on a polished surface.

This reflected light on a face is indicated with *yellow brown;* and it may extend under the chin to where it meets and connects with the light.

A tinge of yellow light is also present under the eyebrows and under the nostrils.

It is attention to all these minute, though necessary, details that reveals skill and labor ; and their absence betrays unequivocally the crude attempts of the amateur.

Wipe out any evidence of color that has spread over the eyes and mouth during the blending or padding, and paint them in with a small brush. If the iris of the eyes is blue, use *deep blue green;* if gray, use *gray No. 2* and *neutral gray;* if black, use *black brown.* Never use *black*, not even for the pupil of the eye, but use *neutral gray.*

The iris of the eye must always be shaded with regard to the light in which it is viewed. Sometimes a strong reflected light is visible, and sometimes it is entirely in shadow. Before the color dries, take a pointed stick, — a toothpick will do, —

and moisten between the lips, and with one touch remove the color where the sight of the eye is indicated. The sight is the highest point of light, and gives a bright, intelligent, liquid look, seen in youth, and without which a sad, sombre, dull expression takes its place.

Under the eyelids use *gray No. 2*, and shade the white of the eye slightly with the cool shadow tint. Add a mere touch of *carnation* in the corner nearest the nose. Under the eyes is faintly discernible a violet tinge, which may be made by adding a little *warm gray* to the cool shadow tint.

The lips are painted with *carnation* shaded with *gray No. 2;* and perhaps a touch of *violet of iron* may be required if a strong shadow is seen.

This first painting must be kept as delicate as possible. Nowhere must there appear any strong color or harsh lines. The mouth and eyes must be soft on the edges or outlines; and though every feature should be definitely formed, there should be no evidence of sharpness.

The local color for the hair may next be washed in. This is best done by a simple mass of light and shade, and with but little, if any, detail.

No blending is permissible in the painting of hair. The brush-marks must follow the direction the hair takes from the crown of the head. Use the color a trifle dry, and press the brush down in it

until the hairs spread out in a somewhat independent fashion, separate and free from each other.

Lift the brush without disturbing this condition, and with it paint the hair. It will be found to indicate the object in a better and easier manner than any other method.

Ochre and *sepia* will form a good foundation for light hair. Shade with *black*, *neutral gray*, or *black brown*. These, with *brown No. 4*, *chestnut brown*, and *pearl gray*, are sufficient for every variety and color of hair. Sometimes for black hair a very blue tone is required in the highest lights; then a touch of *sky blue* or *air blue* may be added to *neutral gray* to produce this effect.

The eyebrows are painted with the same color as the hair. For the first firing, however, but little more is required than simply indicating them. And it is altogether unwise to try and paint the eyelashes at this stage of the work. Having accomplished this much in an almost flat, free treatment, it may now be carried to a much higher degree of finish by means of stippling.

The same colors are used, and too great caution cannot be exercised in the correct accomplishment of this process. Very little color and dainty touches are requisite, and there is an amount of nicety in the manipulation that is only acquired by patient practice and perseverance.

By this means a few little strengthening touches may be added before firing; but if any doubt exists as to the stippling being well done, it had better not be undertaken until after firing. In that event, if not accomplished perfectly, and to one's entire satisfaction, it may be washed off, and done again, and all the labor undergone for the first firing will not be in vain; for after an article is fired, the second painting may be applied and washed off repeatedly without disturbing the original work.

Before having it fired, glance it over thoroughly, critically; if it fails to satisfy expectation, there should be no hesitation in cleaning it all off, and trying again. It is the only way. It is worse than useless to continue, hoping to redeem a bad piece of work at the next painting. Decorators should not deceive themselves by thinking that any perceptible defects will pass unnoticed, nor are they excusable on the plea that it is the first attempt. On the contrary, every successive firing renders them even more pronounced.

The instant an apology of any kind is necessary, depend upon it, there is something radically wrong. "It is pretty good for the first attempt," or "for a beginner" usually means it is pretty bad. In this case no one should be lacking in courage to erase it, and do it over again.

After firing, the same process of applying color

is pursued until finished. This may be in two, three, or four firings; and perhaps five firings may be necessary.

The quality of the work depends entirely upon the fineness of the stippling, especially in miniature work. A large head may receive broader treatment, and fine effects be executed, without resorting to much stippling.

In order to portray thin, transparent, white drapery over a nude figure, the flesh is painted considerably paler than that which is exposed, and then the high lights, as produced by folds of drapery, are made by wiping off with a clean brush the color where necessary.

Sharp, crisp, high lights may be reserved to be taken out when dry.

The white china may then be delicately shaded by soft gray tones, and the effect is complete.

Other draperies are to be painted first with the local color very thinly applied, to produce the palest shade of the lightest parts. The lights and shadows are to be massed in without regard to detail; but in a general way they indicate the folds, and preserve half-tones and reflected lights.

Different fabrics demand different treatment, to represent the material or texture, so all kinds cannot be painted alike. This must be thought out in advance.

Backgrounds should be considered, and kept subordinate to the figure, and may be left till after the first firing to be painted; or the background may be painted first, before the head. In either way, there must be no harsh line between the head or figure and the background; one must be softened into the other. The color of the background may join and encroach a trifle on the flesh, hair, or drapery, to avoid any strong line of demarcation between the two; and yet they must be kept separate and distinct, as it is very easy to muss and muddy up flesh tints.

Where the hair floats out over a background, it must be kept very soft, and partake somewhat of the background tones. In painting the hair, it must be brushed into the background, as though pushing out the background in front of the brush to make room for the hair. A broad, flat, clean brush, slightly moistened with lavender, can accomplish this effect with a light touch, and almost with one sweep of the brush.

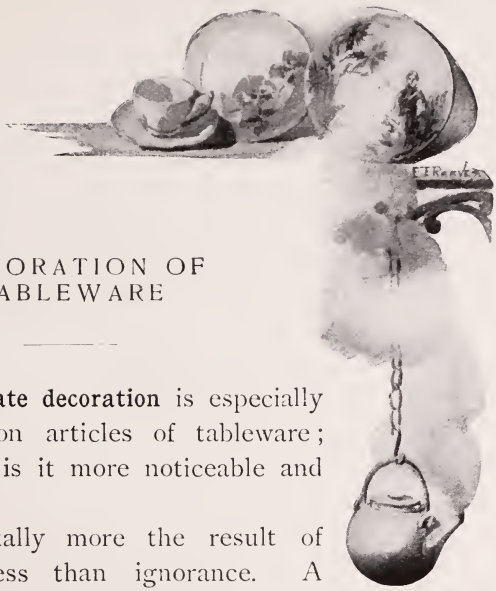
Hands are always difficult to the amateur. Each finger and finger-nail has to be modelled, joints, knuckles, and dimples indicated; and these separate delineations all to bear relation to the whole hand.

Unless one is fully qualified to prevent failure, and anticipate happy results, subjects should be

chosen where the hands and bare feet are not in evidence.

There is another method of painting small heads or figures, such as Cupids; and perhaps it would be rather easier for a beginner who is copying from a black-and-white picture. This is to model first in gray tones, and apply local color after firing. It is simply reversing the previous method. If this is done, there can be no better way than to use *Brunswick black*, and qualify it with *warm gray*, a touch of *carnation*, and *yellow brown*. These combinations will produce several desirable shades, cool, warm, and intermediate, and must be placed on the figure where they belong, as the light and shade fall. Where the clear tones of flesh color are to appear, keep free from any suspicion of gray tones. Have the china white until after it is fired, then wash in the flesh tint.

If any jewellery is to be represented, never be tempted to apply gold; it would be entirely too realistic, besides exceedingly inartistic, vulgar, and in execrable taste. Gold must be simulated by color, a bright though light shade of yellow, shaded with *chestnut brown* or *yellow brown*, and a touch of *neutral gray* with *brown No. 3*.



DECORATION OF TABLEWARE

Inappropriate decoration is especially inexcusable on articles of tableware; for nowhere is it more noticeable and offensive.

It is usually more the result of thoughtlessness than ignorance. A certain amount of harmony should prevail as to design and treatment, and the designs should be rather more suggestive than an effort at realism. While the tea and coffee plant would be suitable for respectively a tea and coffee pot, a beefsteak or fried eggs would be an absurd decoration (?) for a platter in the regulation breakfast set. And while clover blossoms and bees would be a pleasing decoration on a honey-jar, caterpillars on a muffin-dish, because "it is the grub that makes the butter fly," would be entirely too realistic to be agreeable.

On fancy articles, however, such as are made for the desk and toilet-table, and many other trifles made more for ornament than actual utility, a diversity of decoration is allowable, and almost any ordinary unique or picturesque effect be suitable. Even the wildest flights of fancy may be indulged without going beyond the boundary of a fitting decoration, although an extravagant use of ornament is to be avoided at all times.

Anything overloaded with ornament and color, or gold, becomes conspicuous; and the design ceases to have its true place and value as a decoration. On the contrary, it is apt to be regarded as something entirely apart from, and not in conjunction with, the article itself.

If a person is particularly clever in any one special decoration or motive, it is advisable to apply it to only those articles to which it is suitable, and not to decorate everything promiscuously with the same design, as though the idea had been copyrighted, and was being worked for all it was worth.

Another defective decoration is where a principal ornament is divided, or comes to an abrupt termination while incomplete, by a projection or edge, as in the broken shoulder of a plate or vase. It is one of the impossibilities sometimes attempted by the amateur who knows no better;

but it is one of the most pronounced faults in decoration, and loudly proclaims a lack of knowledge of the "eternal fitness" of things in general, and of china-painting in particular.

Another fault of the novice is to have a floral design spring from the extreme edge of the plate or saucer.

Stems should not start from this outer edge, but should be gracefully curved well within the edge, and have the circular trend of the article. Even where a straight, stiff growing plant is selected as the subject, some graceful lines may be imparted, even though liberties be taken with its natural formation.

A realistic treatment of the growth of the stalks of the lily, or fleur-de-lis, is quite permissible on a tall vase or umbrella stand; but a reduction of this same design would be altogether out of place on a small round plate. Therefore, not only must the motive be appropriate, — and perhaps affording a suggestion, — but, what is of equal importance, it must be arranged in an artistic manner. First decide on a subject for the design, and then adapt it according to the space it is to occupy; and it is worse than useless, besides a waste of time, to try and make a square design fit a round space, or an oblong design satisfactorily fill a triangle.

Another requirement is the appropriateness of

the decoration, in direct relation to the object for which the article is to be used; and while this does not necessarily mean to paint cows on milk-pitchers, yet some discrimination must be exercised in painting a table service, and something else is required beyond the design that simply indicates by illustration the intention of the article in question. Decoration is not intended to be an ornamental label.

SOUP PLATES

In decorating a set of soup-plates, the design, if a floral one, should be a conventional arrangement, and confined strictly to the edge or border of the plate. A realistic treatment of flowers or figures is not regarded with favor, owing to a certain degree of incongruity in eating a possible *bisque* of lobster from the petals of a wild rose, or in beholding Cupids disporting themselves in a pool of *consommé*.

The very best decoration for this service is a geometrical design, which may include a set figure or monogram in the middle of the plate, and the border.

Any color desired may be introduced in this connection; and the design may be as intricate and elaborate as one chooses, and may be enhanced

with enamels or raised pastework, or both. In obedience to a passing fashion at present in vogue, an irregular border of some solid color, outlined with *relief paste*, and introducing some graceful scrolls and latticework, would be appropriate. The solid color may conform to symmetrical figures at regular intervals, or take on as fantastic shapes as fancy suggests.

When a solid color is employed, it is also preferable to have the entire set of any service, from soup-dishes to after-dinner coffees, of one uniform tint, rather than a heterogeneous mingling of various colors.

Some years ago this sort of thing, that resembles nothing else so much as crazy patchwork, was indulged in by a few who apparently thought it a matter of congratulation to possess a set of cups and saucers where "no two were alike." The name "harlequin" was quite appropriately applied to such sets.

But by degrees people began to realize how strongly such a set savored of "job lots," and abandoned the idea.

Any one can have a lot of odds and ends collected at random, or the remnants of previous sets saved from the total wreck of the rest of the set; but to own a complete unbroken set of cups and saucers that have been decorated with a given

and visible motive is decidedly more elegant and refined.

There are, to be sure, exceptional cases, where such historical or other value is placed upon china, that it is even deemed a privilege to eat or drink from it. But for the average tableware, a set of any one of the courses should possess some uniformity, either in the design, color scheme, or treatment. There is a wide latitude even here to permit a departure from monotony; for unless a geometrical design is employed, there can be quite a diversity of ideas, all ringing the changes on one subject.

The selection of one particular blossom as a motive will allow it to be depicted in every form possible. Or one color may be used entirely, and thus introduce many flowers of that color.

A monochrome style only limits the color, not the design.

But there should exist some similarity, some connecting link, by which the motive is recognized, and that holds the several pieces together.

There are many articles of tableware that in style and shape suggest the treatment. For instance, a Louis XV. calls for rococo scrolls, and a Louis XVI. seems to demand floral festoons, while an Empire shape requires a more severely classic and dignified treatment. The only outside orna-

ment that could appropriately be introduced would be an Egyptian motive, like the favorite lotus for example.

Entré and dessert plates are susceptible of any style of decoration, and may be as elaborate as one fancies.

If the *entré* is served in a separate dish, shell, or ramikin, for instance, any pictorial or picturesque ornamentation is permissible. One of the favorite decorations is the court beauties of Marie Antoinette's time, or the queens of England.

Cupids are a charming subject, and raised pastework, jewels, and enamels may be used *ad libitum*.

These latter decorations are out of place on plates where a knife and fork are used.

Single dishes for olives, bonbons, radishes, salted almonds, etc., may be treated in any style, save one, and that is a realistic repetition of the aforesaid articles. The comparison is never agreeable between real olives and radishes and their pictured duplicates. On the contrary, a cider pitcher should be ornamented with branches and clusters of apples, and a pitcher for lemonade with lemons. A tankard may be decorated with the hop-vine or grapes, and either be appropriate. It depends upon its ultimate use. But here the intention is significant, and does not conflict with the natural object. The exterior decoration is simply indica-

tive of the contents, "the outward and visible sign" of the interior. Wheat and rye form an appropriate motive for the decoration of a bread-plate; hops also may be used as suitable, and all may be treated either naturalistically or conventionally. But cucumbers on a pickle-dish is too great an attempt at realism.

While all pictorial effects are to be avoided on plates, dishes, etc., that are to contain food, almost any decoration one fancies is permissible on cups and saucers, because the decoration here does not come in direct contact with the contents, and the ornamentation is not obscured as it is on plates when in use. There are numerous articles for table use, where the decoration must, of necessity, be outside, or where it does not conflict with the things more material. On such articles, and on the innumerable pieces of furniture for toilet, desk, etc., including smoking-sets, and many boxes and baskets, no restriction on the style of decoration is placed.

FISH SERVICE

Fish have long been a favorite subject of decoration for this course of the dinner; but it is in questionable taste.

A simple design of shells and seaweeds and mosses, including the accompanying water effects, are more appropriate, because these are the legitimate resting-places for fish. This motive is equally suitable for oysters and other crustaceans, and also for a salad service, especially if the salad be lobster, shrimp, crab, or other shellfish.

Marine views, including some arrangement of a seine, also suggest a suitable decoration. Sometimes the fish-net may be done in flat gold directly over and irrespective of the rest of the design.

Emblematic devices, such as anchors, chains, ropes, bits of coral, oars, and fishing-tackle are quite in keeping, and may be introduced in many fanciful forms, if not on the main body of the ornamentation, then as a border.

If these are modelled in relief with raised paste on a border, they prove quite decorative.

Small shells are easily accessible, and can readily be reproduced. It certainly requires no especial talent to copy these direct from the natural object. The outlines are few, and shells are usually of simple construction.

A few cents will purchase all that are necessary from which to model an entire fish service, as they can be arranged and rearranged many times with a corresponding variety. One or two with a pink lining, and the dark shell of the mussel, are almost necessary in the collection; the rest may be left to individual selection, but may include some bright colors and iridescent effects. In fact, there is a wide margin in selecting as to form, size, and color; and the latter may always with advantage be exaggerated.

A small group of two or three are all-sufficient, with some tall, graceful grasses and a few floating weeds.

First paint in the sky effect with a very pale blue, with or without clouds; this should not extend far beyond the shells, but fade off into the china, near the edge of the plate.

The shells may come next in turn, but without any detail, beyond indicating their form and color. Leave the deepest accents for the second firing.

Then the water is painted in horizontally. Water is usually a reflection of the sky tints, a little grayer, perhaps, and, under certain conditions, a trifle greener. With but very little color in the brush, gently sweep it straight across. Let the brush go directly over about one-quarter, or even one-half, the shells, and they will instantly appear as though that part were under water. Avoid any pressure, or the color will be swept off the shells with the brush; but touch it so lightly that it does not disturb the under tint.

The reflections are easily emphasized with a few touches; and the ripples are indicated by removing the color, and leaving the white china showing.

Tiny fish, and an occasional little crab, may be introduced, but are details that may be omitted with no appreciable loss in the design. The lobster and crab must never be painted red, if seen in their natural habitat, because they only assume this brilliancy of color after they are boiled.

Seaweeds may be most admirably depicted with *carnation* or *carmine* for the pale pink, and *deep red brown* for darker touches, while the deepest accents may be put in with *violet of iron.* This latter color may be used very freely for seaweeds, and will serve for the local color of several varieties. *Rose-leaf green* and *brown green No. 6* and

shading green are good colors for the green weeds and mosses. *Yellow ochre, chestnut brown, brown No. 3,* and *brown No. 4* will give the more sober tones.

To paint fish is not so difficult as many suppose. If the knack has been acquired of softly blending one color into that of another, and still preserving the colors in clear tones, the rest will be comparatively easy.

Fish look better in motion than in repose; besides, in action they are capable of many graceful curves that are preferable as a mere matter of decoration to the straight-out fish, that, too frequently, alas! is a dead fish.

Most fish are modelled in soft, delicate silvery grays, with sometimes color around the head and gills and fins. Whatever color is indicated in the particular fish being copied, that color must be used. If yellow is not felt to be warm enough, add some red. If the white of the china is too cold, give it a thin wash of *ivory yellow* or *silver yellow* or *yellow brown,* as the subject requires. With a palette of *pearl gray, royal Copenhagen gray, neutral gray* or *Brunswick black, air blue* or *deep blue green, chrome green* and *Russian green, rose-leaf green, brown green No. 6, shading green* or *black green No. 7, silver yellow* or *Albert's yellow, yellow brown, brown No. 3, brown No. 4, Vandyke*

brown, *violet of iron*, and *deep red brown*, any kind of fish designs may be painted.

Scales are indicated by thin lines of color, only a trifle darker than local tint.

The sight or high light of the eye must be preserved at all hazards, or it will be indubitably a dead fish; and a dead fish is to be avoided. It neither adds to the decoration nor to one's appetite; in fact, it is altogether very uninviting and unattractive.

Fishes are only endurable when unmistakably alive and in action. Therefore, about one-half of the design (more or less is immaterial) should be under the water, and a faint landscape may intervene between the water-line and the sky.

GAME SET

A game set, it is decreed by fashion, consists of a realistic treatment of edible animals and feathered fowl, both wild and domestic, depicted in their various haunts, occupations, and attitudes.

To paint such a set satisfactorily requires rather more experience in the handling of the brush than in the painting, for instance, of a floral design. A happy rendition of fluffy feathers and brilliant plumage is not easy of accomplishment; and instead of the soft, downy feathers, these delicate,

dainty creatures are too often seen covered with hairs and bristles.

Birds are a difficult subject for those who are unable to paint without tracing the design in first, as it is next to an impossibility to make a definite outline and still preserve the softness around the edges that the subject requires. Even with the greatest of care it is difficult to avoid a certain harshness.

The several features to be observed in depicting birds are rotundity of form, anatomy, and the softness and smoothness of their plumage. The two first mentioned attributes must be expressed in treating other game, together with some other general characteristics with which they are usually identified.

To represent action in animal life necessitates a knowledge of muscles, bones, and sinews required in movement. It is presupposed, however, that the amateur will not undertake to portray animals or birds without a good model from which to copy. If possible, a colored plate should be procured that is reliable. This will set aside any doubts as to the correct shades, and the amateur can judge exactly what colors to use.

Game is usually depicted as in the midst of its appropriate surroundings. That is, if a landscape, it must be that with which that particular game is

associated, — in short, its habitat; and, above all, this should be subordinate to the principal motive of the decoration. While this may be treated as delicately and daintily as is possible, a just regard for harmony and perspective must be observed.

To give undue prominence to the game, and to give too vague and shadowy an aspect to the surroundings with which it comes into immediate contact, is a forced situation, neither natural nor agreeable.

Thought and care must also be bestowed upon proportion, as a conspicuous disparity in size proclaims the absence of all knowledge or respect for the laws of perspective. To see a stag's antlers tower to the tree-tops of the forest is absurd; but no less so than to see him alert and visibly startled at what evidently is miles away, and entirely beyond even his keen sense of hearing.

Hunting emblems can be introduced very effectively, either in connection with the main motive on the border, or alone so as to contribute a pleasing and adequate decoration for a game set. There can be no mistake in the intention, and emblems are to many preferable to realistic pictures.

It is a mooted question, open to discussion, whether it can ever be regarded as in good taste to paint natural objects in a realistic manner on dishes intended ultimately to contain the actual article.

Symbolical devices convey the suggestion very significantly, and without the introduction of any discordant element.

However, those who wish to paint game may make a selection from the following: pheasant, partridge, teal, snipe, woodcock, ducks (of which there are several varieties, wild and tame, as the canvasback, mallard, and redhead), quail, grouse, land-rail, wild turkey, wild geese, and chickens, both wild (prairie) and domestic. Perhaps the regular barnyard fowl and the peacock are as rich in color for decorative purposes as anything. So much for winged game. Other subjects chosen are the wild boar, stag, deer, antelope, rabbits, squirrels, and hares. Hunting-dogs are also used on game-plates.

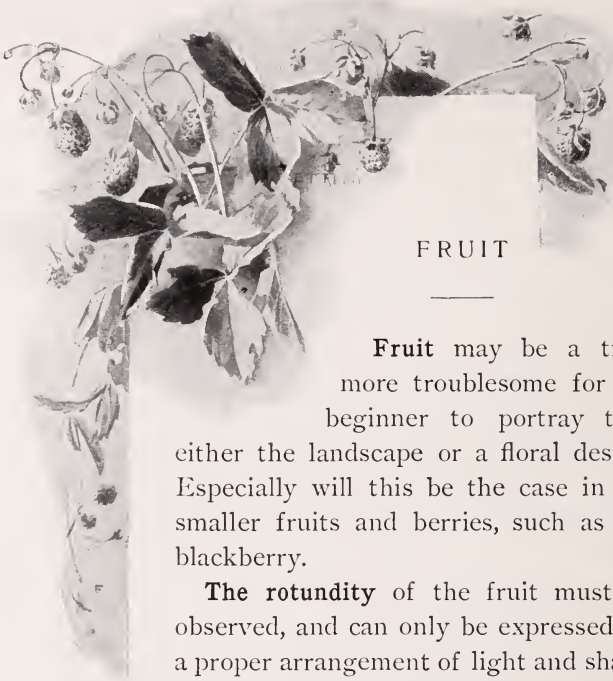
Most of the winged game is somewhat sober in color, of quiet, low tones of brown, which vary from a yellowish tint to dark hues. The colors are at once apparent to the amateur. The pheasant can have a tinge of *violet of iron* or *deep purple* on the breast, and touches of *chrome green* on the neck. Teal have a few bright blue green feathers in the wing, and *chrome green* will represent this brilliant effect.

Nearly all animals, birds, and insects partake in a more or less degree of the same colors as their haunts. This is a wise provision of Nature

for their protection; from the polar bear, whose safety lies in his resembling in color the eternal snow of the Arctic region, to the radiant plumage of the humming-bird, which allows it to flit in security from one brilliant-hued flower to another in the tropical regions. Numerous instances abound, but it would be a digression to continue them; but even a knowledge in the abstract of these facts will prove both of interest and value in their application.

The iridescent effects seen on the necks of some wild game may be reproduced with a little care, by touches of the clear, strong color indicated. It may be a bright blue, — *deep blue green;* or green, — *chrome green;* or purple, — *deep violet of gold;* or crimson, — *ruby;* or a vivid red, — *deep red brown.* These colors will combine well, and when in contact one with the other produce gorgeous effects. Discrimination should be exercised, however; for very little of these brilliant, rich colors will give striking effects. Harmony, rather than strong contrasts, must be the aim.

It is better to keep color subdued, rather than to exceed the quality and value that art requires and nature demands.



FRUIT

Fruit may be a trifle more troublesome for the beginner to portray than either the landscape or a floral design. Especially will this be the case in the smaller fruits and berries, such as the blackberry.

The rotundity of the fruit must be observed, and can only be expressed by a proper arrangement of light and shade, half-tones, and reflected lights.

An apple or an orange consists of one large sphere, but a blackberry is composed of numerous spheres (seed-vessels) clustered together; and not only must the rotundity of each one of these spheres be preserved and represented, but when taken together collectively they form another spherical shape, — that of the entire berry, which demands a certain similar treatment. To depict

fruit naturally requires a little thoughtful care, and attention to a few details.

The light must come from the same direction; in other words, the reflected lights cannot be seen on both sides at once, any more than the high lights. Then, also, some fruit — grapes, for instance — have a transmitted light, which, if properly observed, considerably heightens the natural effect.

A transmitted light is where the strong rays of light — sunshine — are conveyed directly through the object. This may be observed to some extent on a semi-opaque body, such as the thick leaf of the rubber-plant, if placed in a strong sunlight, and, in fact, on all flowers and leaves to a more or less degree. But when the rays of the sun fall upon a semi-transparent substance, like a grape, the effect is very perceptible. It gives a richness and a glow of color that otherwise the grapes would not appear to possess. It renders them mellow and juicy; and they are at once converted into something deliciously luscious, while the absence of this light deprives them somewhat of this quality.

Not only is each separate grape to be considered, but as it affects the mass when it takes its place in a bunch.

The same general style should be adhered to when decorating a set of fruit-plates. If whole

fruit is adopted, whole fruit should be seen on all the pieces. Only whole fruit should be used for decorative purposes. Cut or divided fruit is too pictorial in effect to be exactly appropriate to the exigencies of applied design. It would necessarily involve the use of the largest of fruits, — pineapple, shaddock, and melons; and these would have to be reduced out of all proportion. On the same principle, bananas are to be tabooed. They are not capable of being gracefully arranged; and so many others are, that they should be used in preference. Whether the design be placed in the centre or on the edge of the plate, it matters not, as it is a question entirely of individual selection; but there must be uniformity.

Another prevailing fashion is to allow both the blossom and the ripe fruit to be seen together. While this is seldom seen in nature, it is entirely admissible from a decorative point of view. It lends a certain variety that is attractive, while not interfering with the original scheme; that is, it still remains strictly a fruit, and not a floral, design, if the blossoms are kept subordinate, as they should be.

There is only one fruit in which this plan could not be carried out, for it deviates from all others, inasmuch as it does not mature from a blossom; and that is the fig.

Blackberries, strawberries, raspberries, gooseberries, currants, and cherries are among the small fruits suitable; and oranges, lemons, pears, peaches, apples, plums, and grapes are among the larger fruits best adapted for plate decoration. Some of these are frequently seen in several varieties; so that, in fact, it is quite an easy matter to decorate a dozen plates, using either the berries or the larger fruits entirely. For instance, purple plums and green gages are two distinct varieties; and there are several more, with as many more varieties of grapes, from which to select.

Blackberries admit of vast possibilities as a motive for decoration; for while essentially black, they permit the introduction of considerable color, while the blossom remains white.

The unripe berries are of a yellow green; and these, in turn, are red before they reach the ripe stage, when they assume a rich, velvety black, with reflected lights of crimson. *Neutral gray* and *sky blue* will produce the lightest tones, *stone emerald green* and *yellow for mixing* for the green fruit, with touches of *yellow brown* in the reflected lights. *Carnation* will give the red tones, with *ivory yellow* for the lightest portions, and *deep purple* for the crimson touches on the dark side of the berry. A white spot in the china may be left for the high light, or the color may be

cleaned off with a toothpick moistened between the lips.

The foliage of the blackberry is very decorative, especially in the autumn tints. They are then very brilliant, turning from green into yellow, red, and russet tints. They afford an abundant opportunity for color, aside from the decorative quality of graceful form.

Strawberries may be painted with *deep red brown* and *silver yellow*, shaded with *violet of iron* and *deep blue green.*

Raspberries may be represented with *carnation* and *ivory yellow*, shaded with *orange* and *deep blue green*, with deepest accents of *shading green;* but this must be applied with discretion.

Gooseberries may be portrayed with *moss green J* and *yellow for mixing*, shaded with *rose-leaf green* and *chestnut brown* in the reflected lights.

Ox-heart cherries lend themselves admirably for china decoration. They are of a creamy white, with just a blush of color on one side. *Ivory yellow* and *carnation* will produce these effects. Shade with *deep red brown, violet of iron,* and *deep blue green,* with *yellow brown* for the reflected light.

Red currants are made with *deep red brown* and *violet of iron.*

Oranges may be painted with either *Albert's yellow* or *silver yellow*, with *orange yellow* in the

stronger lights. *Yellow brown* and *deep red brown* on the outside edge of the shadow side, and between this and the local color a shading tone of a somewhat greenish tinge, are employed. *Brown green No. 6* will do for this.

Lemons are cooler in quality; and while they resemble oranges, they do not have the rich, brilliant, warm yellow tones. *Ivory yellow* and *silver yellow* will answer for lemons.

Apples that are a combination of red and yellow are rather more effective than fruit that is green, russet, or all red. *Silver yellow* and *deep red brown* and *violet of iron* will give excellent local color, with *yellow brown* and *shading green* for the shadow side.

Peaches are best represented with equal parts of *ivory yellow*, *yellow for mixing*, and *carnation* for local color, deepened with pure (but fluxed) *carnation; deep blue green* on the upper edge to indicate the delicate bloom, *yellow brown* on the under side.

Plums and grapes also possess this beautiful, tender bloom, rather difficult for the novice to portray.

The best method to paint fruit is to begin by painting the light part first. The receding edges and retreating surfaces must be largely qualified by gray tones. Plums, peaches, and blue or purple grapes have very pale blue edges and high lights.

Next apply the local color, next the shading color, and lastly the reflected light.

The brush must follow the trend of these different tones of light and shade, and one free sweep of the brush should indicate where they belong. Then, with a blender, before the colors dry, begin at the light part, and gently and softly blend one color into the next. This process is easily overdone, and the result is a loss of purity of color and of rotundity.

Glossy fruit, like blackberries, currants, cherries, plums, grapes, etc., must have a distinctively strong, high light. Should the white of the china be left to represent this, moisten a pointed stick and remove the color; but if this is neglected, a touch of white enamel may be applied previous to the last firing; but this method is an artificial means of procuring this end, that is not so artistic as reserving the spot on the china free from color.

The colors mentioned are simply suggestions for the aid of the beginner, and are by no means the only ones to be used.

Warm gray is a color that enters largely into the palette for fruit-painting, and is especially useful for the distant effects. *Yellow ochre* is almost equally useful. Lacroix's new color, *pansy*, will be found indispensable for plums, blackberries, and purple grapes.

Greenish grapes are painted with *moss green J, silver yellow,* and *chestnut brown.* To this add *carnation* or *deep red brown* for the Tokay grapes. While these various colors should be distinctly seen, they must be so graduated one into the other, that where one leaves off and the other begins must not be perceptible.

A few brown leaves, faded into the "sear and yellow," are at times a great addition, and relieve the monotony of the greens, which usually predominate over the fruit.

A worm-eaten leaf (or two) with a hole in the middle, or a piece out of the edge, is very natural, and also quite characteristic of many of the fruits.

NUT PLATES

Nuts, like fruit, when used for decorative purposes may have the blossom and leaves attached. This liberty is licensed by common consent, and has been universally adopted by china-painters.

The ripe, whole nut is frequently seen within an outer shell or burr, which has burst open, disclosing its contents.

The chestnut is a good example of this, and makes an excellent subject for a design. But both nuts and fruit should be kept entirely whole. The

effect is too pictorial for decorative purposes if they are broken.

Nuts are usually of rather sombre, subdued browns, and are associated with autumn tints. Browns possess a neutral quality that contrasts and harmonizes with almost all primary and secondary colors. In fact, a full, dark, deep, rich color can be used with great advantage in combination with the quiet, low tones of brown. And nuts are more in keeping with the full growth and glow of autumnal tints than any delicate, pale spring shades. However, it is, after all, a matter of taste or fancy; and the everlasting "fitness of things" need not always enter into such minor details of applied art.

Yellow or warm browns look well in conjunction with blues and greens; and cool, dark browns require either a yellow or red near them in order to balance.

While it is generally conceded that raised paste designs should be omitted from plates where a knife and fork will be sure to come in contact with them, they are quite correct on plates intended for the nut course.

A conventional design of either the nut or its foliage is exceedingly good and artistic for a nut service, and so also is a geometrical design, if the natural treatment of the nut is not desired as the

decoration. Almost an unlimited variety of designs may be made from the leaf, burr, and nut of the chestnut.

A fine gamut of browns may be produced from *orange, brown M., yellow ochre, yellow brown, chestnut brown, brown No. 3, brown No. 4, Vandyke brown,* and *black brown.* All nuts can be represented properly and naturally with some of these colors.

The leaves surrounding the nut need not conflict with any predominating color; and if green is out of the question, as not corresponding with the rest of the color scheme, the leaves may be painted entirely in low tones of yellow, brown, red, or even olive and russet tints. Nuts really belong to the last, long lingering tones of color, as seen late in autumn, before the blight of winter.

Those most generally employed are both species of the chestnut — the horse-chestnut and the edible variety, hazelnut, filbert, chincapin, Brazil-nut, butternut, almond, English walnut, black walnut, shellbark (or hickory nut; they are similar in appearance), pecan, and sometimes the peanut.

The arrangement of the design on tableware, from fish to nuts, is altogether a matter of individual preference or fancy. The exact centre is not to be selected as having any special advantage in point of symmetry; and the extreme edge is rather

an ultra style, but leaves the decoration uncovered while the plate is in use. One is equally as correct as the other; but as extremes are usually extravagant, even an imaginary demarcation should be avoided. An intermediary course can with safety and propriety be adopted, and the decoration be gracefully arranged between the edge and the middle.

Nut plates are appropriately decorated entirely in flat or raised gold, — this may be in two distinct colors, red gold and green gold, — and bronze may be added to enhance certain effects.

With but little trouble, any small design can be modelled quite realistically — nuts in this case — with raised paste, and good and novel effects created. Quite elaborate designs, consisting of baskets and dishes of fruit, nuts, fish, etc., have frequently been seen, introduced on the borders, in medallions that were gems of art and realism, combined with the happiest of effects.

Sometimes the leaves only of fruit, flowers, or nuts are of raised paste, the rest of the design in colors.

ENAMELS AND JEWELS

Enamels are transparent, opaque, and semi-opaque.

To enamel, really means to ornament with a vitreous substance; and it can be applied to various materials, — gold, copper, china, etc.

Under the general acceptation of the word, all mineral colors are enamels; for when they are used to decorate the surface of the china, the operation is not complete until they are fused to the glaze. But by common consent the word enamel refers especially to the opaque relief colors when applied to china, and is so used most generally in this connection to distinguish relief colors from painting-colors.

All painting-colors are enamel colors, but all painting-colors are not relief enamels. Lacroix furnishes three white enamels, — *Chinese white*, *permanent white*, and *relief white*, or *Aufsetzweiss*, the last mentioned being preferred for general work.

Enamels can be procured like the other colors, either in tubes, or as dry powder in vials. When in tubes they are prepared ready for use, with the addition of enough turpentine to render them manageable. If enamel becomes too oily, alcohol is preferable to turpentine.

If the powder is used, there must be its right proportion of thick oil thoroughly incorporated with it before the turpentine is added; and under no circumstances is it advisable to use any other medium. If too much thick oil is added, the enamel will boil and blister in the kiln, and present a very unsightly appearance, a failure too apparent to pass unnoticed.

Enamels are usually applied in dots or hemispheres; in ornamental scrolls; to simulate jewels; to heighten the high-light effects on floral designs, drapery, lace, fish, etc.; and, in fact, almost any style of decoration is susceptible of being finished this way.

It should, however, be used with restraint, or it ceases to be artistic, especially when used to indicate a point of light. Considered from a decorative point of view, it is entirely permissible to add high lights in relief with the aid of opaque enamel; but it is a question open to dispute whether this treatment is artistic.

Perfect art requires no such material or realistic

aid to produce any such desired effect. High lights are usually left unpainted, and the material painted upon supplies the effect. On china it is represented by the glazed body of the ware. In a pure aquarelle the white paper supplies this necessary feature, and to lose the high lights in either is indicative of either carelessness or inexperience.

When enamel is to be applied in dots, it must be of just such consistency as will form little raised hemispheres of the desired size, and must dry as soon as possible afterwards.

If the enamel is too soft, it will flatten out and spread ; and if the dots are close together, they will connect with each other instead of being distinctly separate, as they should be.

If this condition of the enamel results from too much thick oil, it can only be rectified by the addition of some dry powder. If the enamel is too thin, from too much turpentine perhaps, a little time until it evaporates is all that is necessary to bring it into good working condition.

If the enamel is too stiff, it will not form nice shaped dots ; they will be apt to be irregular in form, and will be raised up to a peaked point, instead of a smooth top, and this is far from artistic or skilful.

Sometimes this defect may be remedied by care-

fully and lightly touching this pinnacle of enamel with a brush moistened with turpentine.

But if the enamel works in this stiff way, it needs a trifle more turpentine if dots are being made; but if long strokes or scrolls are to be made, it will need thick oil, in order to give the elastic quality that is necessary.

Small dots and touches of enamel can be applied with any pointed tool instead of a brush; and many can make a much smaller dot by placing the enamel on the desired spot with the aid of a toothpick, or a point of a fine needle inserted in the end of a brush-handle, than with the brush itself. The method is entirely optional.

Enamel applied in dots is a very pretty and effective decoration; but, like all geometrical figures, they must be symmetrical, otherwise they are inartistic and inelegant. They must be of uniform size and shape and at equi-distant intervals. It requires rather more mechanical than artistic skill to do this work faultlessly.

Colored enamels are mixed, prepared, and applied in the same manner. It is an easy matter, however, to produce any desired shade, without being under the necessity of buying colored enamels. White enamel may be tinted with any of the painting-colors, but they will fire about three shades darker than when applied.

Jewels are sometimes simulated by this method. Turquoise, for instance, is admirably imitated with the addition of *deep blue green* to *Aufsetzweiss*. This pale blue enamel will also be useful for painting forget-me-nots in relief.

To make a turquoise-green shade use *night green;* for rose pink, use *carmine;* for dark red, use *deep red brown*, and either of the strong yellows, — *Albert*, *egg*, or *silver*, will yield satisfactory shades.

In addition to these, there are a few colored enamels that can be applied directly on gold before it is fired. These are, however, limited in number, and consist of but one or two shades of each color.

While enamels should dry quickly after being applied, in order to retain their shape; no artificial means must be adopted to accomplish this end.

Modelling may be done with enamel, and very beautiful effects will result if skilfully done.

Pâte-sur-pâte is but another name for a similar process; and while articles decorated with figures, Cupids, etc., are valuable specimens of this method of modelling with one paste on another, very fair imitations may be accomplished with a dexterous handling of enamel.

First it is necessary to have the china tinted. Usually a dark, rich color is preferred, as it lends itself better to shading purposes in the subsequent

work. China may be tinted and fired, or it may be purchased in the deep underglaze blue, the exact shade and depth of color of which can only be obtained under the glaze.

For flowers and leaves, charge the brush with white enamel, and, if possible, have more on one side or corner of the brush than the other. This will facilitate the modelling, as the enamel must be thicker in some places than others. The flowers are, when finished, modelled in low relief; and the ground color shows through to more or less extent for the shadows. Therefore, the enamel is placed on thin for the shades, and piled on heavier for the lights. A petal of a flower can be done with one sweep of the brush, and afterward more enamel applied where required.

Very pretty festoons of floral designs can be accomplished by this method of handling enamel, but it requires a degree of skill and familiarity of the subject that amateurs as a rule do not possess. But by practice it can be done; and the end justifies the trouble, and amply repays the time bestowed in learning.

Enamel shrinks somewhat in the firing, but to no appreciable extent. The most common failure in the use of enamels is that they fly off the china in the kiln, usually carrying away with them the glaze upon which they rested.

But the china is more to blame than the enamel. The real reason for this disappointing failure is in the unequal expansion and contraction during the operation of firing.

When the glaze of the china contracts in the cooling process more and quicker than the enamel, or *vice versa*, it is evident one or the other must give way, or, in other words, be expelled, as the spot covered by the enamel will no longer continue to hold the drop of enamel if the two surfaces do not fit. It is a law of nature that must be obeyed, in china-painting as well as in china-making.

Following a disaster of this kind will inevitably be the impulse to repair damages. But the success of this undertaking is highly doubtful, as when fired again they may stay on, and they may not; and if they do, the chances are that the others will drop off, and, in the end, the last state may be worse than the first. Sometimes fluxing enamel will obviate this difficulty, but it is by no means an infallible remedy.

The china best adapted for an enamel decoration is a soft glazed china, like the English ware. French china is too hard to stand the treatment with any degree of assured success. Enamel can be applied with quite a feeling of safety, and be tolerably certain of subsequent results, if English china is selected.

Enamel should only be applied for the last firing, as a second firing sometimes proves treacherous.

Use an ivory or horn palette knife with white enamel.

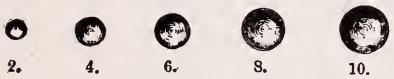
White enamel is sometimes applied in another manner, that yields excellent results that it would be impossible to obtain otherwise.

It is where it is employed to represent a rough or uneven surface, of a burr for instance, and where it is applied to simulate infinitesimal specks of light on such blossoms as the wild carrot or elder plant. The flower is first painted and modelled in greenish gray tones, and then a short, scrubby brush (an old quill blender), after being rubbed in the enamel, is gently and very lightly touched on. It should leave the tiniest specks of enamel imaginable, each separate and distinct; and the effect is most pleasing. Applied too heavily, or in too great quantities, or if blended together, the entire beauty would be lost. It must be applied with care and caution, and with some judgment and discrimination, and not in a hit-or-miss fashion.

So-called jewels are small fragments of colored glass, made to imitate precious stones, such as ruby, emerald, sapphire, topaz, and amythest. These are transparent; but there are several varieties of an opaque nature, such as turquoise, opal, and bronze "jewels."

They come in several sizes, and the accompanying cut is an actual representation of their shape and size. Some are plain, with a smooth surface, and others have the resemblance to cut jewels, and all are polished to a high degree of finish.

These require a special and separate firing; for as they are made of glass, they will not endure the intense heat necessary to develop china colors. They will melt in the kiln, and slip off from where they were intended to remain as permanent fixtures in the ornament; nor is this the worst



Cut No. 26.

feature connected with this attempt at jewelling, as they have a most depressing fashion of attaching themselves in some very inconvenient and undesirable place.

Of course there is less danger if the article can be placed in the kiln in a flat position, and fired perfectly level, as the tendency to slip is then diminished, just as it is aggravated in due proportion to the angle of elevation. There is still another way of fastening jewels, and a comparatively secure way too; and that is by the aid of some

strong cement, after the piece is entirely finished. This naturally precludes another firing.

This method of attaching jewels is not to be recommended; it is not artistic; and to employ such artificial means is not legitimate, but false art.

True art never resorts to a subterfuge, nor yields to the spirit of imitation. The using of jewels at all is not genuine art, but, like other devices, perfectly permissible in decorative work.

A profusion of jewels detracts from the motive. But to be truly effective their use must be considerably suppressed. Too many should never appear on one article, nor should more than one, or at most two, varieties be employed.

Beware of that irresistible impulse of choosing many or large ones because they are cheap. But to keep up the fiction of "jewels," they must be used as though they were in reality as costly as the things they represent, and as though they cost ten dollars apiece rather than ten cents a dozen; and small sizes are preferable to large ones.

Jewels are fastened to china in two ways, — either with a transparent cement that is made for the purpose, or with *relief paste*. This latter, being yellow and opaque, sometimes detracts from the beauty of color and translucent effect of the jewel, but is an easy and reliable method of securing the appearance of a good setting. First

place a small drop of the *relief paste*, and with a pair of nippers or pincers lift the jewel, and put it on top and exactly in the middle of the spot of *relief paste*. Gently press on the jewel, and the relief paste will be pushed out all around in a little rim. This will set in a moment, and will become quite hard. It can then be gilded and fired, and the effect of a gold setting is complete.

Another pretty way of setting a jewel is in a circle of tiny dots, either of enamel or *relief paste*, which latter is gilded.

The jewel effect is somewhat enhanced if surrounded by gold in some way ; and a jewel planted without due regard to its being a culminating point of the ornament, or in a haphazard fashion, apropos of nothing, is useless, inartistic, and inexcusable.

RAISED PASTE

Raised-paste designs are made by the medium of *relief paste*, mixed with its proportion of thick or fat oil and turpentine. The *relief paste* that comes as dry powder is infinitely to be preferred to that in tubes, as this latter usually has an excess of oil. There is more difficulty among amateurs in being able to get the paste in good working condition than in putting it on. After it is in a perfect condition, it will not remain so very long at a time, and requires constant attention and manipulation.

It is one of the phases of decorating where the knife is of equal value to the brush, and is in use about as often.

Mix the powder with the smallest possible amount of thick oil.

In this connection very little oil must be made to go a long way; for if too much thick oil is used,

the design of raised-paste work will not stand up in thin, fine lines, but will fall and flatten out. Moreover, too much oil keeps it from drying; and if, before it dries through and through, it forms a skin or coating on the outside, it prevents all the oil beneath it from drying, by keeping it covered, and not exposed to the air.

The result is a bubbling up of the oil in the firing, and a rough, uneven thread of raised paste, instead of a uniform wire-like edge.

In making long lines and scrolls of raised paste, more thick oil is required than for making dots. With a knife rub the oil and powder together till it is in one compact mass, and then dilute with turpentine till the proper consistency is secured. It is a useless waste of time and material to attempt to do this kind of work with any other than perfectly fresh spirits of turpentine.

This is absolutely essential to assure immediate drying, and the sooner this is accomplished the better. For this reason there are occasions where alcohol is even preferable to any more turpentine. Every time the paste becomes too thick to be entirely under control, it must be diluted with turpentine. The mere dipping of the knife in the turpentine is all that is necessary; as sufficient will probably adhere to it for the purpose, as it does not need to be more than moistened.

This very little quantity will soon evaporate, and the process must be repeated. Now, every time turpentine is added and evaporates it leaves its modicum of thick oil in the residuum until it finally becomes too fat to use. Then more powder is added to take up the superfluous oil.

The secret of good raised-paste work, beyond the execution or brush work, is in keeping it in a uniform and manageable condition.

Relief paste should be of the consistency to work smoothly, and to leave the brush in an even line. It should have an elastic quality, and be entirely under control. Having once secured this tough quality, it by no means is certain to remain so throughout the day's work, but requires constant attention and replenishing.

For long lines or scrolls it must be stringy; and if it is not, but breaks off and refuses to go on, in long unbroken lines, it is "too short," and needs more oil to make it pliable. Only add a drop at a time; for a drop too much is equally as troublesome as too little, and the lesser quantity is easier rectified.

Relief paste may be made "shorter" for dots than for long lines; for dots it is desirable to dry at once.

A good plan is to have a contrasting temperature by slightly warming the *relief paste* and

chilling the china. It sets almost immediately without spreading.

Raised paste designs should be dried thoroughly before firing, and only by natural exposure to the air. Artificial means will not hasten the process.

To be perfectly satisfactory, raised paste should be fired before applying gold. Although some success has been frequently attained by using gold over unfired paste work, yet it is a doubtful expedient ; and it is infinitely better, especially for the inexperienced, to fire it first.

Raised paste work will stand repeated firings, and if applied properly it will not chip off.

One cause of failure is when in making a long line the raised paste barely touches the china, or skips it altogether, thus forming a miniature bridge from one point to another, which, after firing, will crumble and fall off.

To apply raised paste, lift the paste on the extreme point of the brush, and drag the brush along the china so that the paste gradually leaves it. The handling of the brush is very different from painting, and is a little difficult at first, as the inclination is to press down on the brush as in painting. This involuntary movement is almost irresistible until one has had some practice. The method of application of *relief paste* is similar to that for *enamel.*

In both, a line of graduated thickness can be made by starting at the heaviest point, and very gradually lifting the brush away from the china, and the line will dwindle down to a fine point. It is not so easy to reverse this method.

Arabesques of raised paste are of great value in decoration; but a too profuse display is bewildering, and diverts the mind and eyes from the real motive of the ornament.

A restrained use of scrolls in connection with other and color designs enhances the general effect, but this rococo must be gracefully and skilfully treated. Raised paste designs means gold, as it is always a basis for applying gold, and a lavish exhibit of gold is not refined decoration.

It almost seems like an ostentatious parade of the extent of one's purse rather than taste or artistic feeling, and certainly contains an element of vulgarity that too strongly smacks of the commercial rather than the artistic value.

A quaint and unique method of applying *relief paste* is to model objects and devices directly on the china, converting the design into a sort of bas-relief. Birds and butterflies; implements identified with sport, warfare, music, or painting; heraldry, griffins, harpies, etc., can be thus represented, either in miniature, or with a large, bold treatment.

GOLD

Gold placed directly on china is called "flat gold." When on relief paste, it is called "raised gold." There exists a slight confusion in reference to gold that a few words may dissipate. The trade recognizes two forms of gold, — one the real, pure metal, technically known as "burnish gold" (which has been precipitated by acids, and chemically reduced to a fine powder, and then is mixed with its modicum of oil, turpentine, etc.), and the other known as "liquid bright gold," which, perhaps, strictly speaking, is more in the nature of a lustre.

Burnish gold — that is, a gold capable of being burnished with an agate until it assumes the highest degree of polish, and is as brilliant and bright as the name implies — is known variously in the trade as "Roman," "matt," "dead," "burnish," etc.; but these names are given simply in order to distinguish one preparation from another. No other significance can be attached to these trade

names. This same kind of gold is also known as "red gold," "yellow gold," "green gold." These are but modifications, the name indicating the several shades attained by different alloys.

Burnish gold may be obtained, like colors, either in the dry powder form, or already mixed with oil and turpentine ready for use. In the dry state it is to be thoroughly incorporated with about its even bulk of thick oil, and then diluted with spirits of turpentine till of the proper consistency to use.

Liquid bright gold is, as its name indicates, a liquid, and comes in small vials, and is the cheapest kind of gold. The working qualities of liquid bright gold may be dismissed with a few words.

It is to be poured out on a small water-color slant or well preparatory to using, and no particular care is necessary to apply it evenly. Indeed, there is no object in trying to lay it on smoothly or evenly, as it will fire of a uniform brightness in spite of the irregular appearance it presents before firing.

If too thin, it "creeps" beyond where it is intended to be; and to avoid this rather vexatious occurrence, it is well to allow it to evaporate a trifle before attempting to apply it. This it will do in a very few moments, and it works much better.

As evaporation still continues, it will, unless used immediately, become too dry, and recourse is

then to be had to the "essence," a special medium that comes to dilute liquid bright gold.

Nothing else must be used for this purpose under any circumstances.

Liquid bright gold develops at a low temperature, and comes from the kiln with a bright and brilliant lustre.

It requires no burnishing to give it a polish, but shines with such a striking, vulgar glitter as to be offensive to most people. Its relative cheapness, and the ease and swiftness with which it may be applied, are the only things that can be said in its favor.

It is simply horrible in its obtrusive garishness, and blatantly proclaims the base imitation it surely is. There is really only one use for it, and that is as a foundation for burnish gold, and then only as a matter of economy.

In addition to being ugly and inartistic, it does not wear well; and the slightest accidental contact will develop into a disfiguring mark on the china during firing. A careless person had better avoid using it altogether. Applied thin, it fires a purplish hue, of a slightly iridescent character, that is by no means pretty.

When a mistake is so in evidence, it never is pretty, although accidental effects have been at times of great beauty and value.

Perhaps only a mineral painter will realize the difference between a mistake and an accident.

There is a relief paste for liquid bright gold; but it is not recommended as enhancing any decoration, and it may with advantage be omitted entirely.

Wherever this gold touches, there will be an ugly smirch when fired, though entirely unperceived before. If this accident is suspected, alcohol is the only thing that will positively eradicate it, for turpentine will not remove it entirely.

One of the difficulties that beginners very generally encounter is in the application of gold.

This is not surprising, as the appearance and working qualities are so entirely different to the colors.

First attempts sometimes are successful, but this is more frequently due to good luck than good management. Failure invariably results from applying gold too thin or too thick. In the first case, it probably arises from the apparently small quantity one obtains for the money, which induces an effort to be economical.

The inevitable result of this is that after firing, it all rubs off.

The amateur naturally at first attributes this defect to under-firing, believing that if properly fired it must adhere. But one important fact is

overlooked: if the gold was there before firing, it must necessarily be there afterwards. Therefore the amateur may rest assured, if gold rubs off after the article has been properly fired, that he has failed in placing it there. There must be a sufficient deposit of gold to completely cover the surface of the ware, otherwise the article in question will not be gilded.

The amateur always has the most positive proof, if the gold was under-fired; for if the colors, and especially the gold colors, have not been under-fired, the gold is not, as the same heat required to develop these will develop gold.

By degrees the amateur realizes that more gold is required, and in the endeavor to have enough on, fails in an opposite direction, and over-does it by getting on too much. The result is equally as bad and disappointing.

Gold applied too heavily will blister and peel off, leaving the china bare, and perhaps this last state of affairs is just a little worse than the first; for in the former case another application of gold and another firing will probably restore it, while in the latter condition, after concealing these defects with more gold, there is by no means any assurance that another firing will not blister it elsewhere.

It will therefore be obvious that the perfect ap-

plication of gold requires skill and ability, and only by experience and vigilant examination of the work, both before and after firing, can any degree of proficiency be secured.

It is as much a matter of feeling as seeing, and this fact will be undoubtedly understood and recognized. After using gold for a while, and closely observing it in its several varying phases, one becomes accustomed to it, and a feeling of confidence will assert itself; and not until then is successful gold-work assured.

As this *Manual* was expressly written to assist the amateur in painting china, — in short, to use materials, and not produce them, — no formula will be given for the preparation of gold.

There are several well-known methods of precipitating gold that are readily obtainable; but there is nothing artistic in reducing gold dollars to a chemical solution, and there are some exceedingly disagreeable and objectionable features connected with it that it is well to avoid if possible.

It cannot be too strongly urged upon the amateur to purchase only that gold prepared by experts who have made a legitimate business of it, and have tested their right of approval. They have the knowledge, the experience, the appurtenances, to produce it of uniform quality, and to disburse it in uniform quantities.

Competition has had the tendency to reduce the cost of gold preparations to "cut-rate prices;" but one fact must not be overlooked, that there is a standard commercial valuation placed on this precious metal, and a dollar's worth will always cost a dollar. And usually when persons only pay fifty cents for a dollar's worth, it requires no "ready reckoner" to calculate how much real gold they buy, and how dearly they are paying for something that is not gold.[1]

The best and most honest way of buying gold is by the pennyweight, from any reliable source; for one is then tolerably sure of obtaining what one pays for. This commends itself from an economical point of view; but that which is prepared and ready for use is recommended on account of its convenience, and the saving of time and labor it insures.

When gold is prepared and made ready for the amateur, it is compounded with other ingredients. Different formulas vary in these compositions; but enough has already been written to show the

[1] While it might seem invidious for the writer to recommend any special preparation of gold, I have permission to publish a communication recently received from M. Lacroix, in which he says he has tested Marsching's Roman gold, and found it excellent, and satisfactory in every respect; and for its chief qualities of color, brilliancy, and smoothness he gives it his unqualified approval and indorsement.

necessity of flux, as gold, like color, must have some medium by which it can be united in the kiln to the glaze.

Other ingredients are added for manifold purposes, and if they exist in excess, to give bulk or weight, it is obvious that the quantity of gold is reduced in proportion; and the quality and color of the gold will depend upon the ratio of the gold to the other ingredients.

Mercury, silver, lead, copperas, bismuth, silica, borax, and lampblack enter more or less into some formulas — not all at once, but for various purposes. Other compounds are less frequently used.

The color of gold varies in its natural state, but may be artificially changed to many tints.

Gold may be alloyed or adulterated with silver, but the deep, rich color of gold is sacrificed in consequence.

Silver pales the tint, and added beyond a certain proportion changes the color to a greenish shade commonly called "green gold." Compared with gold, very little silver is used, therefore it cannot be had except in the powder. It has the same propensity to tarnish as any other silver.

As "green gold" costs the same as red or yellow gold, silver may be added by the purchaser to either; but it would be advisable to fire a sample before applying it on anything of consequence.

While a slight admixture of silver with the gold changes its color somewhat, it materially increases its bulk and working capacity, which may perhaps offset the deterioration of tint. It does not affect its wearing quality, and for many purposes is equally as good as the richer gold.

Unfluxed gold, otherwise known as "hard gold," is prepared deficient in this respect (of flux), in order to be used over color, the color supplying all the flux that is necessary. If fluxed gold were used over a highly fluxed color, there would be an excess of flux, which mars the beauty of gold.

But fluxed gold may be used over matt colors, as these are lacking in glazing properties, or flux.

Gold shows to much better advantage if placed directly on white china, and it is advisable to so use it whenever practicable.

Gold obtained ready for use, mixed with oil and turpentine, is placed on a small square of glass that is generally fitted in a box for protection. This may be used from this same glass, or removed to another larger piece, where its manipulation will be easier.

The gold palette may be a china tile; but, whether it be china or glass, it must be kept for this purpose alone.

Ground glass is not to be recommended, as either ordinary plain glass or china is preferable.

If the gold be thick and unmanageable, it will soon become soft and in good condition by slightly warming it. Add sufficient turpentine, and with the palette knife rub or stir it up thoroughly by turning it over and over.

This turpentine will soon evaporate; and it will be necessary then to add more, for it must be kept in just the right condition to flow easily from the brush. Care must be taken that it is not thin enough to spread beyond where it is intended; but if too much turpentine is accidentally dropped on the gold, fresh gold may be added, or a sufficient time allowed for it to evaporate. But it must not be forgotten that every time the excess of turpentine evaporates, it leaves its deposit or residue of thick oil, and in course of time the gold becomes "too fat" for use. The dry, powdered gold will best rectify this unavoidable condition.

Alcohol poured over it will to a certain extent force the superfluous oil out of it, by pushing it away in advance of the alcohol, as it spreads out in all directions from the gold, and may be wiped off the palette. Sometimes this is all that is necessary to restore it to good working condition.

Gold that has become "too fat" is a good basis upon which to experiment for green gold, by adding silver. It will prove comparatively cheap too, as silver is inexpensive.

Gold is costly, and it is well to take all possible precaution against wasting a particle of the precious metal. To this end is recommended two wide-mouthed bottles, one for turpentine, one for alcohol, having them both plainly labelled.

Every time it is necessary to dip either brush or palette knife into turpentine in the course of using gold, more or less will float off, and being heavy will sink to the bottom, and unless secured in some such way as here suggested it will be lost. These bottles should be kept exclusively for these specified purposes, and in a little while the accumulation will be surprising.

The amount of gold saved in this way in the course of a year, at no trouble or inconvenience, amounts to considerable. The turpentine may be poured off carefully without disturbing the gold settled on the bottom ; and it can then be removed with the palette knife, and transferred to the palette.

The same deposit will be found to have accumulated in the alcohol bottle, which should be kept to wash brushes and knife.

Gold and colors must be kept rigorously separate, and not used with the same implements. There should be separate brushes, separate knife, and separate mediums, — oil, turpentine, and alcohol.

A brush once used in gold can never be cleansed

sufficiently to paint with again; but a brush once used in color, and freed from every trace of it by a thorough washing in alcohol, can be used in gold.

If space permits, a table-drawer, or at least a box, should be set aside to contain only the gold accessories. Too much stress cannot be laid on the injunction to keep them apart and clean.

Brushes in use constantly in gold need not be washed out. They will remain pliable over night, and if not, soon can be made soft with the aid of turpentine. When a steel palette knife becomes clogged with gold, dip it in turpentine, set fire to it, and it can be freed at once from all gold.

In its "chemically pure" state, gold would never be taken for what it is by the amateur unaccustomed to seeing it in this condition. When ready for use, it somewhat resembles, in color, consistency, and stickiness, a poor, cheap quality of molasses in cold weather.

As it comes from the dealer, it is too thick to use until diluted with turpentine. Being a heavy metal, it is necessary to keep stirring and turning it over every little while to keep it in good condition for use.

In applying gold, lay it on rather thin, but evenly and smoothly, going over the same allotted space two or three times, till of uniform thickness, and until the china is thoroughly covered.

There is no need whatever of doing more than to completely cover the china. Gold is opaque, and more than is actually required is altogether unnecessary and wasteful. As it does not show, no one will be any the wiser. It neither looks nor wears any better by applying it thick, and there is always the risk of its blistering in the firing.

Gold wears better if applied twice and fired twice, and this method is recommended for all tableware.

For economy, liquid bright gold may be used for the first firing, as a foundation for the real gold; but, while this may answer for ornamental articles that are seldom handled, it should not be used on articles of utility.

If a piece of china is only to have one firing, the gold should be laid on twice, allowing time to dry after the first and before the second application.

Imperfections can frequently be discovered before firing, and regilded.

There must be enough gold to conceal the glimmer of the glaze on china; and if, upon closest scrutiny, it still glistens through the gold, it is proof positive that there has not been a sufficient quantity laid on; and if there is not enough before firing, it is a foregone conclusion that there will not be after firing.

Glazed colors must be fired first, before gold is

put over them; but gold may be laid over matt colors before firing, provided the colors are entirely dry. It requires a skilful and trained hand to accomplish this nice piece of work satisfactorily. Nothing short of perfection in the handling of the brush could execute a gold design over an unfired color, as the slightest deviation would ruin the decoration, and it cannot easily be remedied.

The only recourse would be to clean off all color and gold, and do the work all over again.

As this is discouraging, the amateur is advised to have the color fired first before attempting to work gold over it, until he is sufficiently expert to feel entire confidence in the undertaking.

Avoid, if possible, placing gold over yellow, even though fired, and silver over pink.

Gold under-fired will rub off, and if over-fired will be glazed, and will not respond to the burnishing-tools; both of these mishaps are disappointing, but not beyond repair.

In case of accident, and if it is necessary to remove some of the gold after firing, either burnish or liquid bright gold may be successfully abstracted with aqua regia,[1] used similarly to directions given elsewhere for hydrofluoric acid.

[1] Aqua regis or regia, literally "royal water," was the name given to this compound by the ancients because it could dissolve gold, the most truly regal mineral known, the king of metals. It

When gold comes from the kiln, it has a dull, dead appearance, something the color of yellow ochre, and entirely devoid of any lustre.

To obtain this wonderful radiance that no other metal possesses, three methods are employed, according to the degree of brilliancy required. It may be rubbed with a glass brush, scoured with burnishing-sand, or burnished with an agate.

A glass brush consists of a bundle of spun-glass threads fastened securely together up to within half an inch of both ends. As this wears away, — and it does so rapidly if used constantly, — the string may be unwound, but

Cut No. 27.

consists of two, three, or four parts nitric acid, and one of muriatic or hydrochloric acid. Aqua regia is a powerful acid, but not quite so dangerous as hydrofluoric. This latter acid is a mixture of one part of fluor-spar with two parts of sulphuric acid. These are heated in a lead still, and the vapor that is evolved is hydrofluoric acid. It will eat into, corrode, and dissolve all metals except lead and platinum.

Hydrofluoric acid and aqua regia are very powerful and dangerous to handle, owing to their caustic qualities, and should only be resorted to in extreme cases, and, when not in use, put safely away and out of everybody's reach.

must be tightly secured again before using. By this means the entire brush may be utilized; for as the brush-end is worn off, it is easily renewed. If it becomes soiled, it can be artificially worn off by passing it a few times over sandpaper.

These extremely fine threads of spun glass, finer than fine needles, are very brittle, and apt to break off and stick in one's hands, causing considerable annoyance, if nothing more serious.

An excellent precaution against this unpleasant result is to wear gloves; and to prevent this glass fibre from clinging to dress, draperies, or carpet, the article to be burnished should be held over paper, which can afterwards be folded up and thrown away.

It is almost invisible, but makes its presence manifest very sensibly if it gets on the hands. And if any of these splinters (they are very light, and will float away on the air) fall on unfired color, there is no possible way of repairing the damage. It will not be noticed till fired, and then they will be very much in evidence.

The other method of polishing (with sand) is preferable on this account if no other.

Burnish-sand is a remarkably fine white sand of uniform size, and does not scratch the gold, as one who is not informed to the contrary might be likely to imagine.

With a piece of chamois-skin or a soft woollen cloth — a piece of old flannel will do, though it must be absolutely clean, and free from dust or grease — lightly moistened with water, and dipped in the sand, then transferred to the surface of the gold, rub gently and evenly till a beautiful lustre is obtained. It requires no effort or manual labor; still, if properly fired, there is no danger of doing any damage by the pressure needed to polish the gold. If there are any crevices where the sand cannot reach, as, for instance, around a handle, the glass brush, being flexible, should be used.

Both glass brush and sand give the gold a lovely lustre of an almost satin-like finish, that positively glows with its soft, brilliant, though subdued polish. But gold is capable of a still higher degree of brilliancy; and to obtain this full and shining splendor burnishers are brought into requisition.

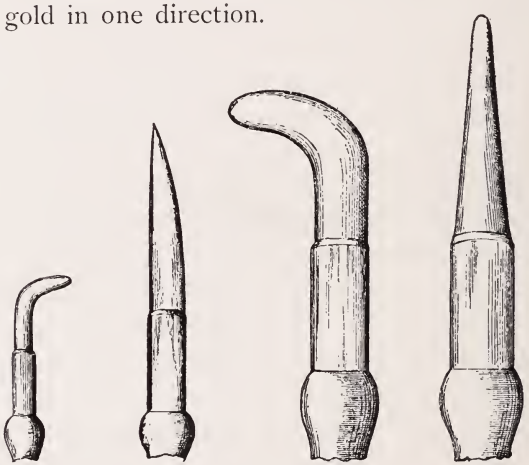
These come in various shapes, to go into all sorts of crannies and crooks of the different styles and sizes of china, and are fitted with wooden handles. They are of agate, bloodstone, or jasper, there being but a slight variation in these stones.

These tools must be kept perfectly smooth, as any irregularities would disfigure the gold by scratching it. Burnishers' putty, a piece of sole-leather, and "elbow-grease" will keep these implements in good condition, and free from any

roughness. In using these burnishers, rub the gold always one way, and rub hard.

Burnishing is laborious, and it is no easy task to burnish a large surface.

Scratches must be avoided at all hazards, and this is best accomplished by following the gold in one direction.



Burnishers.

Gold will burnish better if it has not been handled, or allowed to come in contact with anything but the proper implements; and if it can be done as soon as removed from the kiln, while still warm, all the better.

After burnishing, polish with whiting or rouge, to give it a fine, satin-like finish.

Under the bloodstone burnisher, gold is soon made to assume a very glossy aspect, and, although intensely luminous, is not generally admired as much as the more subdued radiance obtained by either the glass brush or sand. This bright and brilliant glitter always seems to possess an element of vulgarity that it is well to avoid. By using either the glass brush or sand, gold is divested of this vivid exhibition, and assumes a soft sheen and lustrous elegance that is refined, chaste, and artistic.

There is another way of finishing gold that is very beautiful and artistic, but requires a great deal of patience, skill, and labor; and this is to etch a design with the agate point.

It may be a geometrical design, used as a border or an all-over design, as arabesques and scrolls; or it may simply be intended to burnish the high lights of flowers, fruits, landscapes, etc. Indeed, here is a wonderfully wide scope for individual taste, ingenuity, and expertness.

To be able to draw freehand designs on the unburnished surface of gold with the agate, requires not only a knowledge of drawing, but a steady hand as well, as an unfortunate slip of the burnisher would leave a disfiguring mark.

The only remedy in this event is to have the article fired again, when the previous burnishing

disappears, and to try again. Some designs, if repeated or continued in gold, and finished in this way, add very much to the decorative effect.

Gold grapes and leaves, for instance, introduced on or in a punch-bowl, enhance its gorgeousness and attractiveness.

To obtain the best results, apply the gold twice, fire twice, and polish twice with sand. For the third firing, simply paint with gold, veins, edges, high lights; in short, treat it as one method of modelling. It will be comparatively easy, as the fresh application of gold, being brown, shows up very nice and clear.

After firing, this last addition is very perceptible, and is to be burnished with the agate point, leaving the main portion unburnished. It will have a soft lustre anyhow, and will, by contrast, be very effective and handsome.

Gold is usually applied with a brush; but sometimes for a fine tracing or delicate line-work, as in a lace border for example, it may be applied with a pen.

A finely pointed pen is all that is necessary; and there comes an especially fine pen, that artists use for pen-and-ink drawings, that is used for this purpose. It is steel, but if kept perfectly clean and free from rust will not corrode nor injure the gold in the least.

The same pen must not be used alternately for burnish gold and liquid bright gold. The pen must be supplied or fed with a brush.

If a straight band or line is desired around a plate or dish, or, in other words, a circle, a wheel must be employed. It is the only way by which a uniform width can be obtained. It requires some little practice to use one successfully, and, though a mechanical contrivance, is not so easy to use as it looks.

As gold is too expensive to waste in repeated trials of either pen, brush, or a wheel, *deep red brown* or *capucine red* is suggested with which to experiment until dexterity is acquired.

Monograms in gold form a favorite design for the centre of tableware ; and elaborate letters have many graceful curves, fine lines, and delicate scrolls and touches. As in all other gold decoration, these should have two applications and two firings. The first application, whether done with a brush or pen, is comparatively easy ; but after firing, it will be found by no means so easy to adhere strictly to the previous outlines.

A "trick of the trade" that is worth knowing will obviate this difficulty, and produce results in much less time than with either pen or brush. When the gold is in prime working condition, instead of charging a brush with it, use a finger of

the right hand, — preferably the middle one, as it is the longest, — and dip it in the gold, and after securing enough, apply directly to the previous gilding. Hold the plate in the left hand, breathe on it to give it moisture, — by condensation, — and with a rotary motion of the finger charged with gold rub the gold over the monogram or lace-work.

At first there will be nothing but what resembles a smear of gold. Continue rubbing with a rotary motion, and in a minute or so the white of the china will be cleared up, and the gold will all be on the monogram, leaving the surrounding surface clean.

This must be accomplished, however, on gold as it comes from the kiln, and not after burnishing. It is the slight roughness of the fired gold that furnishes a "tooth" to take up the fresh gold.

If it were first burnished, fresh gold would not adhere. This process is perhaps not artistic, but it saves time and labor.

Extreme edges may be gilded without the aid of a wheel. First charge the brush well with gold, and rest it firmly, though without pressure, across the edge. The brush is now at right angles with the article. Should it be a cup, for example, either move the hand or cup around in one direction, and the gold will leave the brush quite evenly.

If the cup is too recently painted to touch (to

move it) place it on a block, and move the block around, keeping the hand containing the brush steady and still, but in direct contact with the edge.

Pretty bronze effects can be secured by first tinting, preferably with a matt color, firing, and then giving it a thin wash of gold. The gold must be very thin indeed, and may be blended to render it even, though this regularity is by no means always desirable.

China made with a relief pattern treated this way is effective, as the gold settles into the indentations.

After firing, the color is still distinctly visible, and over all is spread the sheen of gold. It glitters and glistens with every movement as it reflects the light, and fairly sparkles if tiny specks of gold have been distributed regularly over the surface.

Gold must always be used with discretion; for while a little enhances china decoration, and adds considerably to the general effect and finish, if regarded solely in the same relation as a gold frame is to a picture, a profuse display is vulgar, and is more indicative of the depth of one's purse than the breadth of his understanding.

Some labor under a misapprehension that "gold covers a multitude of sins" in other directions,

and, in consequence, use it lavishly and indiscriminately. It should only be used as an accessory, not as the conspicuous ornament, except where it is to be the principal feature of the decoration.

An extravagant misuse of gold materially detracts from the painting, while a repressed use of it tends to heighten the decorative effect.

It is never the quantity of gold-work, but the quality of it, that proclaims the artist.

Bronzes are also used in the decoration of china. These vary in shade, and may be had of a greenish, brownish, and reddish tinge. The colors are by no means pronounced; but they produce dark, rich, sombre effects, that in their subdued coloring are very pleasing. They afford a striking contrast to gold and color decoration, but, as a rule, are too heavy in appearance to be in general use. However, there are occasions when these bronzes are appropriate, and produce desirable effects that could be obtained in no other way.

Bronze powders come in paper packages, and, like gold, are sold by the pennyweight. They are mixed with thick oil, and then diluted to the proper consistency by spirits of turpentine.

Never use lavender or any of the essential oils with either gold or bronze, as turpentine is all that is necessary.

Gold may be added to bronze, and afford a

diversity of color, or, rather, of lustre. Apply all bronzes in a similar manner as gold, and, after firing, burnish with sand. It is not in the nature of bronze to assume any very high degree of brilliancy, but it is capable of receiving a beautiful, lustrous polish.

Bronzes are more in keeping with ornamental pieces that have a somewhat heavy style of decoration, and are a little incongruous with a light or airy trifle.

The brushes, mediums, etc., used for bronze, must be kept exclusively for bronze, and entirely separate from the gold implements. An innumerable variety of metallic effects can be produced with gold, bronze, platinum, and silver.

Platinum presents a hard, cold, lustrous surface, that alone would not be interesting; but with a gold design traced arabesque fashion over it, or in conjunction with other harmonious treatment, affords a delightful variety, and is preferable to silver, as silver tarnishes, and platinum does not.

Bronze may be used over or with platinum to advantage, forming an especially dignified treatment; and if the culminating points of the design are put in in gold, a very rich effect will be secured. The sober tint of the bronze will counteract the sheen and shimmer of the other two, and an artistic balance may be maintained.

Platinum possesses one virtue that other metals do not; and that is, it retains its polish and brilliancy after burnishing, through all subsequent firings. The other metals usually all become matt again, and have to be reburnished. By taking advantage of this fact, very beautiful results may be obtained.

Silver is much softer and warmer in tone and quality than platinum, but being unable to resist oxidation from the atmosphere and contact with gases, is not so desirable.

The beauty of silver is sacrificed in favor of the more enduring qualities of platinum.

Silver is lovely in connection with pale blue; but it must not come in contact with the gold pinks — use platinum here instead.

It is well to keep a record of all metallic experiments, and to correctly chronicle proportions for future use.

There are various lustres more or less pronounced in color, that are applied the same as liquid bright gold. They fire well, and possess a radiant iridescent decorative quality, that is not specially admired nor artistic. They are seldom used except to conceal an undecorated surface, as the inside of a cup.

FIRING

Firing of china is one of the most interesting processes connected with its decoration. It is the culmination of all the previous work, and can make or mar its artistic and commercial value for all time. Without it, the work is incomplete and perishable; that is, the painting can easily be obliterated.

Firing, therefore, is the final and essential requisite to render the decoration absolutely permanent. It not only develops the colors, but indissolubly attaches them to the glaze when at the point of fusion; thus the decoration becomes incorporated with the body of the ware.

This union makes the painting definitely part and parcel of the article, and it can no longer be regarded separately.

This is one reason that the decoration should be appropriate; as the process of firing unites the two arts — that of the potter and of the decorator —

into one complete and imperishable form, which must henceforth be considered as a whole.

The convenience and advantages of owning a kiln, and the knowledge and experience acquired from firing, cannot be overestimated. It is an object-lesson that practically demonstrates previous theories, and constantly reveals new ones.

Those who have never seen a kiln fired have a novel sensation in store for them, for there was never a firing that was not interesting from some point of view. It is a revelation and an education to watch the process.

Each successive firing affords a new experience, and imparts additional information; and the knowledge thus acquired is of such great value and importance that perhaps it is not too much to add that no one has a thorough comprehension of the art of china-painting who has never fired a kiln. Without this familiarity of the action of fire upon the various colors, metals, glazes, etc., one's understanding of the art is still deficient; and it is of but little consequence how well one can apply the colors, if the results after firing still remain a matter of vague speculation.

The information thus attained will prove to be of very material assistance in securing desirable results, and avoiding undesirable failures. It is therefore recommended that the student provide

himself, as early in his career as possible, with a kiln, and do his own firing.

The expense should never be a deterrent factor, as in time a kiln more than abundantly repays both interest and principal on the money invested.

The trouble one incurs is more than counterbalanced by the satisfaction, convenience, and numerous other advantages derived from possession.

It is not within the province of this *Manual* to recommend any of the many kilns to be had, their particular features and distinctive merits being duly announced in their respective advertisements.[1]

Portable kilns, made expressly for studio purposes, are of several sizes, and to be used with various kinds of fuel, — gas, charcoal, oil, etc.

The selection is usually a matter of individual choice or necessity, governed by two important items; namely, the facility for obtaining the necessary fuel, and the place where the kiln is to be set.

Illuminating-gas is the fuel most generally employed with the regular studio kiln, but there are circumstances under which this cannot be obtained. The next preference is given to charcoal.

Charcoal gives very satisfactory results. Some sheltered spot should be secured out of doors where

[1] The Hall Keramic Kiln has always given me perfect satisfaction, and for durability and quick firing has no superior.

the kiln will not be exposed to violent draughts, and where its cooling off too suddenly, when the fire is drawn, can be provided against.

Firing with charcoal in the house is to be avoided; since charcoal is not only unpleasant to handle, but the fumes are very disagreeable, if not positively dangerous, on account of the carbonic acid gas that is thrown off.

If the firing is to be done within doors, and the gas is available, both as to quality and quantity, it should be substituted for charcoal, as cleaner and easier to manage. But to have perfect combustion from gas it must be of a good uniform quality; and to obtain the best results, a strong, even pressure is imperative.

A light pressure, which is equivalent to an insufficient supply, will never yield the required heat to vitrify the colors, no matter how long the firing continues. Firing is not so much a question of time as of heat. A full, strong head of gas will produce the required temperature in a certain specified time; but a weak flow will never go beyond a certain limit, and that is inadequate for the purpose. An assured amount of heat must be generated to reach the high temperature necessary to fuse the colors, and this cannot be attained with an insufficient supply of gas. Moreover, it is highly essential to have the pressure entirely under control.

A good plan is to have the gas register through a separate metre, which should be a large one, and in proportion to the pipe; and in this way only can an exact account be kept of the amount of gas consumed in estimating the cost of each firing.

Instructions usually accompany each kiln, giving in detail full particulars as to setting up, size of pipe required, and directions for firing. But the responsibility of the firer does not end here — this is but the beginning ; for there have never yet been instructions that could cover every possible contingency. And even the best of them are only approximately thorough, and to be of value must be supplemented by personal experience.

While the kiln is a purely mechanical contrivance, the firing of the china can by no means be regarded as a mere automatic performance, nor can it be satisfactorily accomplished in a perfunctory manner.

Firing makes a demand on one's best efforts, and exacts intelligence, skill, and care.

Verbal and printed advice undoubtedly contribute their quota of information to the amateur firer that is of great assistance, by telling him what to do and what not to do ; and this enables him to fire after a fashion.

But it is only through the medium of keen observation and practical experience, combined with

a retentive memory, that anything like an assured success can be attained.

There are so many and varied risks and vicissitudes connected with firing that it would be impossible to more than indicate how success may be achieved and failure avoided.

It is not advisable to fire a kiln larger than medium size in the studio, as the enormous amount of heat thrown off renders the room exceedingly uncomfortable.

One fact will manifest itself sooner or later to the observing firer, especially in large cities: the force of gas fluctuates with the weather, the season of the year, and even the time of day. For instance, the main pressure is increased towards night; as more gas is consumed after dark than during the day, a greater flow is necessary to supply the increased demand.

This is especially noticeable on a dark, stormy day, when more artificial light is required than on a fair, sunny day. Likewise, darkness sets in much earlier in the day in winter than in summer.

These differences are very perceptible to an experienced firer, who makes due allowance both in turning on the force, and in the length of time given to the process. These minute details must be considered, as everything connected with firing is of the utmost importance.

A kiln should be kept perfectly clean.

The iron pot in which china is stacked should be well wiped out before placing the china; a damp cloth does this perhaps better than a dry one.

In the course of time and frequent firings, the iron pot disintegrates, and infinitesimal particles of iron scale off.

Even though these be in the form of an impalpable powder, if allowed to settle on the china while in the kiln, they will absolutely ruin it.

Cleanliness will prevent this catastrophe.

The inside of the iron pot should be occasionally whitewashed.

The advantages of whitewash are twofold, — cleanliness, and the increase of the reflective power of the heat. The gain to the china is obvious.

After using the whitewash, pour water over it, and let it stand undisturbed till again required. It will be found to have settled at the bottom; pour off the clear water, stir well with a stick, and it is ready for use.

A pail half-full will last a long while; it is inexpensive, and easy to manage.

A wise plan before stacking a kiln is to light the gas a few minutes, ten or fifteen, in order to thoroughly dry it. It will be dry when it is warm; then turn off the gas, and proceed to pack in the china.

This is not an absolutely necessary part of the process, provided the iron pot is thoroughly dry. A kiln fired every day or two in the studio is apt to be dry, while a kiln kept in the cellar or out of doors is more likely to be damp. If this precautionary measure is not adopted, there is the chance that as soon as the gas is lighted, and the iron pot begins to warm, the moisture, which has been quite invisible, will arise in the form of vapor. If it does not evaporate, it will condense, and perhaps fall on the ware. If this does happen, it leaves an unsightly mark, one that cannot be eradicated.

Where a certainty exists that the kiln is perfectly dry, no previous warming is necessary; but even under these favorable circumstances the gas should be turned very low at first to provide against a possibility. If the iron pot does not exude moisture, the ware will, which is equally as disastrous, if, when converted into steam, it is allowed to settle on the decoration. Besides, some of the fluxes are soluble in water; and if brought in contact with the vapor and gases generated in the kiln, they will not only dissolve, but will evaporate with the escaping steam.

This "*sweating*" is bound to occur, but there is really no reason why it should do any damage; that can be prevented by having very little heat at first, and an unobstructed draught. The kiln and

the china will then heat gradually, and will dry at the same time.

There will be no excess of moisture if the gas is turned low at first, and slowly increased at intervals of ten or fifteen minutes.

The necessity of carrying off this accumulation of moisture and gases arising from the ware, colors, oils, etc., before they have a chance to carbonize and deposit on the china, is the reason a good draught is so imperative in order to furnish thorough ventilation.

This also explains why a kiln must have an opening, or rather, two, one in the bottom, and another at the top. After a certain length of time has elapsed after the lighting of the gas, these various gases and fumes are dissipated, and the danger arising therefrom is gradually diminished and finally disappears.

China in the kiln is very sensitive and susceptible to extraneous influences, and if brought in contact with any foreign matter when at the point of fusion will, in all probability, retain the impression permanently. Therefore the heat must penetrate slowly, to allow the natural vapors to pass off by evaporation, and be entirely eliminated.

One of the most disappointing, and possibly the most frequent, disasters that happen to the inexperienced firer is to discover, upon opening the

kiln, that everything has turned the color of smoke. This gray tinge varies in density from a scarcely perceptible shade to almost blackness.

This is caused by an excessive flow of gas, and considerably more has escaped than could be consumed.

The result of the superfluous gas is a residuum, the product of imperfect combustion, which, being heavier than the escaping gases and vapor, falls in upon the contents of the kiln, and fuses to the exposed surface of the china wherever it comes in contact.

If the draught had been stronger, and in proportion to the flow of gas, it would have carried it off, and this accident would have been averted.

This demonstrates the fact that while a deficiency of gas is ineffectual, a surplus amount is a positive damage. A kiln must be set "just right," and be managed in like manner. It requires an expert to properly adjust a kiln, and also to fire it.

This usually fatal accident sometimes can be partially, if not wholly, repaired by another strong firing; but this method is not to be relied upon as an infallible remedy.[1]

[1] A similar mishap occurred during the writer's experience with a chocolate pot; it was decorated with pale green and delicate carnation (No. 1), tints which were totally ruined and dis-

It is claimed by the manufacturers that the kilns heat alike all around; that they fire evenly, the heat being equally distributed, the burner being exactly in the middle; but, as a matter of fact, this is not always so.

Nor is it altogether desirable that it should be so; for in the average studio work, there are usually some pieces that require a strong firing, and others that require a light firing, and, were the conditions alike, they could not all be accommodated at the same firing.

Experience teaches that one side invariably heats first, and only experience will teach which side.

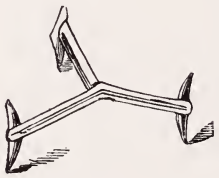
The gold colors (carmines, purples, crimsons, and violets) should go in the hottest place; while the grays, iron reds, yellows, and greens will glaze well in the coolest part of the kiln. The browns and blues take the intermediate place.

The bottom of the kiln, being directly over and in immediate contact with the flame beneath, must of necessity be hotter than the top. These varying degrees of temperature are not to be lost

colored by smoke, but were entirely restored during a second firing. Strange to say, though, while every vestige of smoke disappeared from the decorated *outside* of the chocolate pot, the inside still remained a uniform shade of gray, but of an iridescent quality that could by no other known means be duplicated. While the article in question lost value commercially, it remained an object of much curiosity and speculation.

sight of when stacking a kiln, but are to be taken advantage of, and turned to account.

Stilts are used in stacking a kiln, to place between pieces of glazed ware to keep them from touching each other. If this precaution were omitted they would fuse together, and one article would firmly adhere to the other; for they would be attached by the melting of the glaze, and would consolidate.



Cut No. 28.

Stilts come in various sizes, and one should be provided with a generous supply of each size.

They are made of unglazed earthenware, and should be discarded when they have lost their points.

Platten (thin sheets of fire-clay) and asbestos may also be used for the same purpose. These may be had in sheets, and may be further utilized to form temporary shelving, to hold more china than the kiln would otherwise contain.

To economize space, small pieces of china can be placed within large pieces, provided they are protected by stilts, platten, or asbestos. A bowl or jardinière, for example, may contain another smaller one, or a cup and saucer, with a possible pin-tray or butter-plate within this again.

China can be put in the kiln in any way to fit,

— lengthwise, crosswise, upside down, or any other conceivable fashion; but each piece should be firmly placed, so that any jarring or jolting will not make any of them lose their equilibrium and topple over. This grave accident would most likely injure several pieces, as well as the one that loses its balance.

Plates, saucers, trays, etc., may be placed flat, one on top of the other, making a pile of them, or they may stand on edge against the side of the kiln.

Space must always be allowed for expansion; and too close packing, on this account, is to be avoided. Another thing to be avoided is the placing of any article decorated with *liquid bright gold* in close proximity to the gold colors, especially pinks; and the same precaution should be observed in packing *green gold,* as it contains silver. The fumes from both *liquid bright gold* and silver might affect a delicate pink, and it might not; it is too great a risk to assume that it will not. It is worse than useless, for it is utter folly, to recklessly and voluntarily place in jeopardy the work bestowed on the decoration, perhaps the labor of days, or even weeks, on a mere chance.

If there is a draught-hole in the bottom of the kiln, it should not be covered by any article of china unless supported by a large stilt so as to allow a free passage of air.

In another part of this *Manual* carmine is alluded to as the "test"-color in firing; and the changes due to under-firing and over-firing are given, — one resulting in a muddy yellowish tint, the other in a purplish cast, both equally unattractive.

The chemical changes that firing produces, however, were reserved to be given here as the proper place.

Carmine is called a gold color, but it also contains a certain proportion of tin and silver. During the process of firing, while this pigment is being developed, it undergoes several distinctive phases. At first it is in a raw, crude condition; and a low temperature will never impart the final flush of beauty it possesses when perfectly developed.

In this first stage of firing, the silver predominates, and the pink is weak and obscure. It then assumes a dull yellow tint that is far from agreeable. When the proper degree of heat has been reached, the pink is in the ascendency; and then the development is at its height, and the color is perfect. Beyond this point the silver is destroyed; and the result is a tendency to lose its rich warmth of color, and it inclines to a bluish or lilac hue.

Different degrees of heat can therefore be gauged by noticing its effect on carmine.

Of course the length of time required for firing depends entirely upon the size of the kiln.

China should be heated slowly, raising the temperature gradually, not only to avoid the condensation of vapor, but to prevent accident by breaking, which might occur if heated too rapidly, especially with large pieces.

Sufficient time must be allowed for the china to expand and contract in heating and cooling, as hastening either process is apt to result in serious damage.

Small articles can be heated through much more rapidly than large punch-bowls or jardinières. There is another accident that the firer cannot provide against ; and that is when a piece of china, during firing, splits or breaks, as by explosion. This, however, is of rare occurrence, and is the result of a defect in the ware.

Sometimes a grain of sand imbedded has no room to expand, and it forces its way out. Sometimes it is an air-hole, or bubble of air, that must find vent when it becomes superheated, and the force of the heat expels it.

The laws which govern expansion and contraction are infallible ; and everything in nature is compelled to obey, or suffer the consequences.

After the firing is accomplished, the kiln should be allowed to cool naturally before it is opened. The larger the kiln, the longer the time required for it to become sufficiently cool to unpack with safety.

As each piece is removed, it should be closely examined, first to compare with a mental memorandum made previous to firing, and secondly to discover if the firing it has received be perfectly satisfactory.

If the colors are all right, and they have glazed well, the firing has been successful. If the colors are dull and unresponsive, or the gold rubs off, or the pinks are yellowish or bluish, or the reds dark and uninteresting, something has gone wrong, — either too little or too much heat was applied. If the failure has been the result of too little firing, another and stronger firing may bring the articles to a satisfactory condition. If, however, the fire has been too hot and continued too long, there is nothing but disappointment for the owner of the china.

Should the surface of the china feel a trifle rough to the touch, as it frequently will, it may be rubbed with an old piece of emery cloth or fine sandpaper. If there is only new on hand, rub two pieces briskly together till it loses much of its grittiness. Do not, however, allow this to touch the gold, but only the color.

A piece of advice to those who do not do their own firing seems appropriate here. Always have the colors thoroughly dry, and especially the gold, before sending to the firer. There is so much

danger of their being rubbed off or smeared in the transportation.

The china should also be properly cleaned before it is sent to the firer.

Every piece should be critically examined on all sides, every finger-mark removed, also the label occasionally found on the bottom. This is not the firer's work; and, moreover, it requires time which the firer should not be expected to bestow.

Persons taking or sending articles away to be fired should mark them in some fashion in order to readily identify them. It may save much confusion and time.

The firer has a reputation to sustain, and may be safely trusted to do his part well. But he cannot invoke any cabalistic incantation, and convert bad drawing into good, nor correct palpable failures into perpetual harmonies.

The kiln can do a great deal towards perfecting a decoration on china, but it cannot do everything. It cannot perform miracles; and the firer must not be held responsible for all the flagrant faults of the amateur.

China can be mended by using a cement that comes for the purpose. It is mixed the same as a powder color, and applied on the broken edges. If the break is in such a place that the pieces must be tied in place, asbestos cord is the article to use.

This can then be fired, and the join will be perfectly secure and impervious to water, and scarcely perceptible.

Should the article be of such a shape as to preclude tying together with this asbestos cord, it can be placed in another larger piece of china, and the intervening spaces filled with small pieces of asbestos. It must be packed in tightly all around and underneath, so that one piece of china cannot come in contact with the other.

Occasionally a little fragment is knocked off the edge of china, and the chip is lost. If this nick is not too large, it can be filled with either white enamel or raised paste. The latter is preferable, as, when gilded, the defect is scarcely noticeable.

UNDER-GLAZE PAINTING

For under-glaze painting the under-glaze colors must be used. These are prepared to resist the intense heat to which the ware is subjected after being glazed, which usually reaches a very much higher temperature, and lasts much longer, than that required to fire the over-glaze colors.

The most satisfactory way for the amateur to work and get the best results is to obtain the materials from a pottery if possible. These will include not only the article (to be decorated) in biscuit, but the colors and the glaze.

It is so necessary for perfect work that the body of the ware, the glaze, and the colors should have an affinity for each other, that to procure those that are in constant use, and known to be reliable, relieves the amateur of many doubts and misgivings.

The method of applying colors on the biscuit is very simple, and in treatment very like the

manipulation of water-colors, though these same colors may be used with oil and turpentine.

The under-glaze palette may be confined to few colors, and yet attain a wide range of tints and a sufficient variety of color for nearly all subjects.

Designs should be simple and effective, and treated broadly, in strong masses of light and shade.

Fine, delicate work, containing much detail, is often almost obliterated by the glaze; and, for large ornamental pieces, free, bold work is very much more effective and appropriate.

Under-glaze painting seems to demand vigorous treatment, and should not be undertaken except by those having had experience in the handling of brushes.

There are two distinctive stages wherein color may be applied before, or under, the glaze. One is while the clay is still wet. If the body of the ware is not white, it must have a coating of "white slip," to receive the painted design.

The colors are lightened in tint by the admixture of this same "slip," and are applied in impasto. The addition of white renders the colors opaque, and they can be superimposed one over the other with a freedom only equalled by an oil painting. This gives great force to the character of the decoration; and this treatment requires vig-

orous, skilful handling, and not weak, vacillating touches.

The other method is after the ware has been fired once. The biscuit is then treated as a water-color painting, if water is to be the medium. First dip it in water till it absorbs considerable moisture. This is necessary to wash on the colors in graduated tints, and it insures a perfect control of the manipulation.

The highly absorbent quality of the biscuit, if objectionable, may in a measure be overcome by giving it a wash of a thin solution of gum tragacanth. This will render the surface less porous, and make it more convenient to work upon.

Monochromes are usually done this way; but polychromes have frequently an addition of white to lighten the shades, and the painting proceeds as in gouache painting, or body colors. Where white is to be used in this manner to produce lighter tints on the biscuit, ground porcelain is used for this purpose, because, having been fired, it has shrunk; otherwise, the biscuit having been fired and consequently shrunk, a fresh unbaked clay, not having been shrunk, would not "fit" the surface of the biscuit. The expansion and contraction would not be even, and the result would be cracking or crazing.

The decoration on the biscuit should be fired

before it is glazed. This gives a final opportunity for retouching before it receives the glaze.

The glaze, while it tones down inequalities of outline, emphasizes the masses of color; and sometimes what appears a light color before glazing will be considerably deepened and darkened afterwards.

One of the serious difficulties the amateur encounters is that some of the colors before firing do not resemble in the slightest degree the colors they represent, or as they emerge from the kiln. The successful use of under-glaze colors must depend largely on a knowledge of this fact, and of their subsequent appearance; the reliance must be upon results, rather than the appearance of the colors before glazing and firing.

The under-glaze yellows are very strong colors; and a little goes a long way, and if over-fired usually predominate.

Greens are crude, and need subduing. *Best black* is in reality the darkest kind of green when fired and glazed. Reds fire away and change. Blue is a satisfactory color; *matt blue* a beautiful color that changes very little; and *cobalt* possesses a depth of rich color unequalled elsewhere, and is one of the colors that will stand the highest degree of heat.

It is advisable to prevent colors on the biscuit

from spreading, as it is difficult to efface; and all the deepest accents and strengthening touches with which the final painting is re-enforced should be put in with the brush rather dry. A flight of birds, or twigs and branches of a tree, could not be depicted definitely otherwise.

Glazing softens all harsh lines, and brings out the body and strength of the decoration; but all fine, delicate details are usually lost.

All articles painted on the biscuit may be re-painted and fired the second time before glaze is applied. And after glazing, it may again be re-touched and fired, and it may receive two or more coatings of glaze as well.

There is a positive fascination about the work, as the results are rather uncertain, and it would be quite impossible to produce two decorations exactly alike.

Artistic effects are always aimed at; but sometimes one's hopes are irretrievably blasted, and sometimes the results by far exceed anticipation.

GLASS-PAINTING

Glass-painting is a very similar process to china-painting, and any one having a fair understanding of one will find no new difficulties in pursuing the other.

For all practical purposes, and especially to make the distinction in this *Manual* between pictorial painting on glass, and ornamental painting on glassware, the subject may be divided into two classifications; namely, "glass-painting" and "glass-decorating."

Glass-painting, therefore, refers to painting on flat surfaces of glass, to be used wherever there is transmitted light, as windows, lanterns, screens, etc.

Glass-decorating will treat of the adornment of portable articles of utility and ornament, and, as such, possesses an artistic excellence entirely its own; and as it is distinctively an embellishment of something already made and in itself complete, and that is already attractive and beautiful from its delicacy in form and color, it forms one branch of applied art.

Unquestionably a painted window, as such, is also applied art; but it has borrowed so much from pictorial art, in the realistic treatment of subjects, both as to form and color, and in the introduction of natural, picturesque designs, that it is pessimistic not to call painted glass high art.

Ecclesiastical windows that are the result of separate pieces of colored glass leaded together, and called "mosaic glass-painting," are perhaps more the productions of an industry than of an art; as they are frequently but the translation of the artist's designs, put together in a sort of mechanical fashion by the artisan, who, though possessing some special skill in this work, displays no invention whatever. His skill depends on the faithful execution of the original draft of another's creation.

But to take a piece of flat window glass, — and what is more uninteresting from an artistic point of view? — and by the application of a well formulated design, and an artistic arrangement of colors and a correct distribution of light and shade, create a pleasing image or picture upon its transparent surface, is most certainly an art.

And the one who is thus able to convert this commonplace material into a vision of loveliness, and transform an ordinary article of commerce, something in itself of little worth, into an article of lasting value, deserves the name of artist.

It is hypercriticism to withhold the just meed of praise for one, and unjust and ungenerous not to appraise correctly the full value and title of the other.

Various imitations of painted glass have been from time to time placed upon the market to delude the unwary and unsuspecting public ; but, like all base counterfeits that are cheap, they lack art value. The imposition is so palpable, the fictitious value so apparent, and the usefulness and durability so transient, as to offend good taste and refinement, and it does not deserve encouragement.

To be genuine, vitrifiable colors must be used, and must be fired in, to unite with the glass.

All other attempts to paint on glass with other pigments are deceptive, and are not considered as legitimate glass-painting. Moreover, the results are ephemeral and fleeting.

Colors for glass-painting are derived from the same source — minerals — as those prepared for china ; but they are prepared especially for glass. This means that they will fuse at a much lower degree of temperature than those to be used on china.

The intense heat required to vitrify the colors to the glaze of china would liquefy glass.

M. Lacroix has labored long and patiently to perfect a set of colors to enable the amateur to

paint glass. This list is now on the market, and is so far complete that any subject one fancies, antique, mediæval, or modern, may be painted with equal freedom and success.

Some of the glass colors were made to exactly reproduce certain shades and effects employed by prominent artists of the twelfth to the sixteenth century, so that these ancient works may be faithfully imitated to-day. The work that has successfully resisted the elements of time for several centuries deserves recognition.

In fact, the present century has been able to do but little more than make an ingenious pastiche on the productions of all preceding centuries.

As far as it was possible, Lacroix has given these glass colors the same names as those applied to his china-painting colors, when they approximate the same shade. Thus, for instance, there is *crimson* and *ruby purple*, *capucine red*, and *deep violet of gold* and *light violet of gold*. This renders it comparatively easy for the china-painter to select the colors he desires for glass-painting.

The colors as prepared by Lacroix are divided into two classes; namely, "grisailles, or gray tints, and the painting-colors." There are eighteen of the former and thirty-four of the latter. The grisailles are to model and outline with, the painting-colors to give the color the subject demands.

The best plan for the amateur to pursue is to procure a piece of clear white glass, the requisite size and shape, and select some simple design — one that will admit of rather a broad, bold treatment, without detail, and be effective in few colors.

The glass should be a hard quality of glass, as inferior grades have a superabundance of lead in their composition, and will not be able to resist the heat of a kiln without getting out of shape, to say nothing of the chemical action upon the colors.

After selecting a design, attach it to the back of the glass by either strips of gummed paper or small pieces of wax.

Place the glass then flat on the table, and the design will be distinctly seen through. Sometimes it is preferable to paint glass on an easel, and for this purpose there is one especially adapted; it is a simply constructed frame that can be arranged at any desirable angle.

The centre is open, presenting an unobstructed space for the glass, so that nothing will intercept the light.

Few brushes are necessary: a long, slender brush for making the outlines, a few square shaders, the size depending on the work, a badger blender, and what are called "scrubs." This is a small bristle brush, either cut or burned down, and is used to

remove the color when it is intended to represent the high lights; for, as in china-painting, the unpainted surface has to supply the high lights. No white is used for this work, as white is opaque, and one of the principal charms attending glass-painting is to retain the transparency.

The glass colors of Lacroix's list are prepared in two ways, and all the colors but *yellow of silver* and *Jean Cousin's red* may be had in both forms. These mentioned can be had only in the dry-powder form. *Yellow of silver*, sometimes called *yellow stain*, is chloride or salt of silver. It produces a most brilliant and vivid, transparent yellow; and bright colored as it is, and notwithstanding certain difficulties or restrictions attending its use, it is quite indispensable to professional glass-painters.

In the hands of the amateur the results are uncertain; and it would be as well if, in first attempting, beginners avoided it altogether, and substituted *dark yellow M.*

If, however, the amateur does want to use this risky color in the effort to master every phase of the art, a trial piece had better be attempted first. The ultimate success of using this color depends largely upon the materials of which the glass in question is composed.

There are chemicals sometimes used in the

manufacture of glass that will unite with this color in the kiln, and destroy its beauty and brilliancy.

As the results are by no means certain, a piece of the same glass for the experiment should be procured as that eventually to be decorated. *Yellow of silver* is a very agreeable color in its perfection; but it must not come in contact with other colors, nor must it be fired at the same time as other colors. They will probably be entirely destroyed by the vapor arising from close proximity. It must be used on the reverse side of the glass, as it will entirely obliterate the grisailles. After firing, the dull surface, made by the ochre with which the color was mixed in its preparation, must be scratched off, and the glass will possess a most wonderfully transparent texture of an intense hue of yellow.

Never use a steel palette knife with *yellow of silver.*

Jean Cousin's red is rather an expensive color in comparison with the others, but so little is required that a vial of it lasts a long time.

This is used to produce flesh tints of the sixteenth century, and is named after one of the most famous artists of that time.

There are four other reds, of which *capucine red* is the brightest, and *fire red* the only transparent

color, the others being semi-transparent. Mix red and *yellow ochre* for flesh tones.

There are six greens, all transparent except *chrome green*, which is semi-transparent.

The two *violets of gold* are semi-transparent.

There are five blues, all transparent but *King's blue*, which also becomes transparent if fired at a high temperature. They can be mixed with yellow to make green ; they also mix with the purples. With red they make a color almost black.

The browns are five in number, all semi-transparent. They require a good strong fire, or they are apt to be dull. Over-fired, they lose somewhat in tone.

The three purples, *crimson*, *ruby*, and *scarlet*, are full, brilliant, transparent colors ; and delicate rose and pale pinks are produced by applying in thin washes.

There are three blacks ; one is opaque, the others semi-transparent. Use these latter, thin, for gray tones.

In addition to these colors, Lacroix furnishes two matting pigments which can scarcely be called painting-colors. One is *white* and the other *greenish*. They are designed to obscure the transparency of the glass, giving it somewhat the rough appearance of ground glass.

They both may be applied where there is no

color; and they have their use in concealing the view beyond, without obstructing the light.

The grisailles, or gray colors, are called "ordinary" (*brown, black,* and *red*), "semi-fine" (*brown, black, XVI. century,* and *outlining black D*), and "fine" (*A, B, C, XIII. century D*); with the latter are classified the two *bistres* (*dark* and *light*), *brown grisailles 15* and *0*, and the *modelling color.*

The "ordinary" are more specially used to paint outlines; of the semi-fine, *outlining D* is only used for this purpose. These grays are semi-transparent, and, while they can be mixed freely with each other, must be kept apart from the painting-colors.

This is owing to the chemical composition being principally derived from copper and iron.

Owing to the transparent nature of glass, both sides may be painted; and this is the easiest way for the amateur to produce good results. In fact, these colors were prepared by Lacroix to be applied in this way, as affording much the easier method, and the possibility of finishing with one firing.

By utilizing both sides of the glass, and using the two mediums, the work may be carried to a high degree of finish before firing.

Therefore all these colors come in two ways, — one prepared with oil and turpentine and in small tubes (like the china colors), and the other in dry

powder in small vials. These latter are to be used with water, to which is added sugar, gum arabic, or honey, in sufficient quantities to work well.

Very little glycerine may be added too, if the work in hand calls for the color to be kept "open" for any length of time.

Glycerine does not ever seem to dry, but a few drops in water will be of advantage to a slow painter.

The idea in using colors with two opposing mediums, oil and water, is that, having no affinity, they can be used alternately; this lessens the danger of the under tint "coming up" when a wash of color is placed over it.

It is to be understood that this entire method, including materials and mediums, was prepared for the amateur, to enable him, by showing an easy way, to enter into a new field of work. Artists and professionals use their materials differently.

In beginning this kind of work, the amateur is to make the outlines first. This does not necessarily mean that they should be heavy or broad, though they may be both. But a steady, dark, uniform line should follow the outlines of the design. This may be done with either medium, remembering that when the next color is applied the other medium is used. The next step to follow the outlining is the modelling, done by any of the grisailles.

Remove the high lights with one of the "scrubs."

When this has become perfectly dry, turn the glass over, and apply the painting-colors wherever they belong.

The same brushes must not be used for both oil and water.

Briefly, this method involves three distinct operations: first, outlining; second, modelling or shading; third, the coloring. Then fire.

The same process may be repeated if it is desirable to re-enforce any portions. This necessitates a second firing; but with little practice, the veriest tyro can finish up the entire work for one firing.

Lacroix also furnishes a small muffle or kiln to fire glass, the fuel being charcoal. It is called a pyro-fixateur. It fires in about an hour; and it is claimed for it that, holding the exact quantity of charcoal for this specified time, there is no necessity for watching it, as it will not over-fire the glass.

GLASS DECORATING

GLASS TABLEWARE demands a different treatment; geometrical designs, arabesques, traceries, and graceful scrolls, accentuated with dots and touches, either in raised or flat gold, or enamel, either in groups or singly, seem to be a more suitable form of decoration than floral designs, or, in fact, any pictorial effects.

These are, however, by no means to be tabooed as inartistic; on the contrary, they are frequently introduced with telling effect. They should be in proportion, and treated delicately and daintily.

The transparent nature of the material must not be lost sight of, but must be regarded with the respect it commands on the resources of applied design.

In decorating glassware, whether for use or for ornament, relief paste, opaque enamels, transparent relief enamels, and jewels are principally

used, and are sufficient to afford an abundant variety in their different application.

All of these materials, including color, must be those that have been prepared for glass, and will vitrify at a lower temperature than those prepared for china.

A hard glass should be selected, either Bohemian or Baccarat, and a sample test fired. Soft glass is unfit to decorate, as it is incapable of retaining its shape. Soft glass has a superabundance of lead, and consequently the heat of even a light firing will melt it. A broken bit of the same glass will be given to the purchaser for the asking, and with this a test may be made.

It is not easy to manage a design on wine-glasses or goblets, etc. ; but it is easiest done by filling them with white tissue paper or raw cotton, or by making a cornucopia by twisting a sheet of letter-paper into a sort of funnel to fit inside the glass. It will now be in readiness to receive either the drawing or tracing. It can be distinctly seen, with this white opaque background, which should be kept in till the decoration is finished.

Few colors should be used on one piece of glass, especially if the piece is small. With gold and white enamel one or two colors is sufficient, — pink with blue or green, but not all three, except one be used very sparingly and at long intervals. Over-

decoration is always bad. A pretty border, which may be simple and neat, or deep and elaborate, is always acceptable. Beyond this but little is admissible.

A monogram, a heraldic or other emblematical device, or some ornamental figure that is complete in itself, may be repeated on both sides, or reappear even on three or four sides ; this may be made into a continuous decoration by connecting each section with the next.

Floral designs had better be transcribed in conventional style for the ordinary tableware ; but on purely ornamental pieces any elaborate painting or enamelling may be indulged in freely, and sometimes indeed they seem to demand it ; as, for instance, tankards and drinking-vessels of all descriptions seem rather associated with a riot of color and a wealth of ornament, than identified with simplicity in either.

Firing glassware in the ordinary china muffle requires constant, careful watching, as if allowed to go beyond a certain prescribed limit, a failure will be the result, and labor, time, and money a total loss. One rule, though not infallible nor always to be relied on, is to turn off the gas as soon as the contents of the kiln are distinctly visible.

The writer once had a remarkable experiment in

firing a round flower-glass. The first firing resulted in converting it into a decided oval shape. Since there was nothing especially objectionable in this, the decoration was finished, and it was fired again. This time it came from the kiln completely transformed back to its original shape, and was entirely and perfectly round once more.

VITRIFIABLE CRAYONS

There yet remains another source of attaining decorative effects on china and glass, and that is by the means of a vitrifiable crayon.

Vitrifiable crayons are in wood, and very much resemble in general appearance, size, shape, etc., an ordinary lead-pencil. There are for use on glass, six grisailles or gray tints, two browns, two blacks, red, and a violet shade; and six colors, — blue, yellow, black, red, and two greens. For china, either in the biscuit or glazed, there are twelve colors, — a bright blue, two grays, one yellow, a black, two reds, three greens, a violet of iron, and a violet gray.

In conjunction with these vitrifiable pencils, dry-powder colors — sauce — come in vials for stomping.

These vitrifiable pencils are a recent innovation in the line of mineral color materials, and are the

result of Lacroix's many experiments and inventions. They are to be used as ordinary pencils with which to either sketch, draw, or write. They can be used on ground glass, or biscuit in its usual condition ; but on plain glass or glazed china the surface must be rubbed over first with turpentine to which is added a few drops of thick oil. When this dries, it affords a "tooth" that will take the pencil-strokes very nicely. They are to be fired to the same degree as the body and colors require to fuse. They are treated as the regular crayons, and the result is in effect the same. Therefore any one who can make a pencil sketch or a crayon drawing will find no difficulty in using these.

This method also secures an original drawing in an absolutely permanent form.

There has been a recent effort to make popular a fad to preserve autographs on china, but heretofore it has been rather a complex undertaking.

With the aid of these pencils an autograph or a characteristic sketch can be accomplished with no difficulty.

China decorated in commemoration of special events, or as souvenirs of interesting occasions and anniversaries, presents untold possibilities.

The autographs of a bridal party, for instance, with suitable inscriptions and quotations, together

with date, etc., would prove a valuable reminder of this event, if perpetuated in this permanent form. The occasions will suggest themselves doubtless to many, where the use of the vitrifiable crayons may be brought into requisition. In short, there seems to be no limit to the possibilities of porcelain, nor of its decoration.

THE WORD "PORCELAIN"

THE derivation of this word is unknown. Many suggestions have been offered as to its origin, but they have nearly all been repudiated. One is that the word is a colloquial contraction of the French *pour cent année*, from an ancient tradition that it required a hundred years for the materials to mature.

Another is that it had its origin from an obsolete Portuguese word, *porcellana*, a shell, from its supposed resemblance; and still another speculation is that it is named from a weed, *purslane*, a purplish flower, something the color used on Chinese productions.

Another, too fanciful for serious consideration, is that it derived its name from the king of Porcena. The story is that in his efforts to avoid being poisoned, he discovered a cup that would not contain poison without breaking.

Perhaps the most reliable derivation is that given by the Portuguese *porcellana*, or the cowrie shell. This is called *porcellanen* by the Germans, and *porcelaines* by the French.

This shell approximates in transparent texture the real porcelain or china.

Another reliable source of information gives

this belief, and furthermore says, there are *porcelli* in Italy, and that *porcellani* is taken from a fancied resemblance of these shells to pigs!

If this be true, antagonistic as it is to every thought of art and refinement, the natural deduction is that our beautiful porcelain cups and our "porkers" have the same derivative in the Latin word *porcus*, a pig.

In support of this curious theory, it is a well-known fact that the Romans call the ridge of land raised by ploughing, *porca*, from its similarity to a pig's back.

It is difficult to imagine how anything so delicate and dainty as a piece of porcelain could be evolved, even in name, from anything so gross and vulgar as a pig. But until some one else offers a more authentic solution, this, offensive as it is, must be accepted.

In Holland's translation of Pliny, speaking of fishes, he refers to *porcelains*, and mentions a paper that is polished with a *porcellane*.

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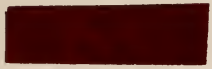
PLATE I. — PAINTING COLORS.

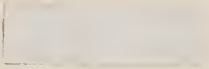
Violet of Iron

Relief, for Gold
Chinese White
Permanent White
Flux

Sepia

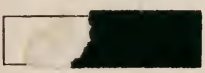


Deep Red Brown

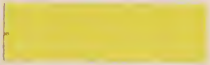


Pearl Grey No. 6

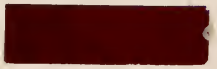
Cornflower Blue



Emerald-stone Green



Ivory Yellow



Carnation No. 1

Brown M or 108

Deep Violet of Gold

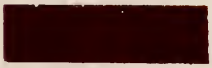
Deep Chrome-Green

Deep Ultramarine

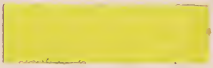
Yellow Ochre

Deep Carmine No. 3

Silver Yellow



Ruby Purple

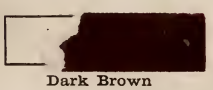


Yellow for mixing

Light Carmine No. 1

Apple Green

Deep Purple



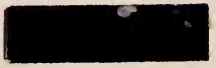
Dark Brown

Brown Green No. 6

Deep Blue

Neutral Grey

Capucine Red



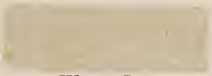
Ivory Black

PLATE II. — PAINTING COLORS.

Carnation No. 2

Deep Blue Green

Orange Red



Warm Grey

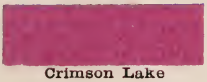
Orange Yellow

Grey No. 2

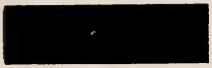
Dark Blue

Deep (or Russian) Green

Common Blue



Crimson Lake



Raven Black

Carmine No. 2

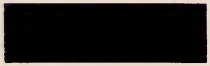
Victoria Blue

Yellow Brown

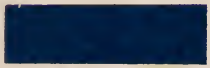
Grass Green No. 5

Brown No. 3

Light Violet of Gold



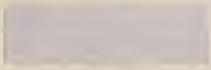
Dark Green No. 7



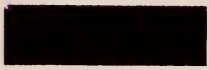
Night Green

Jonquil Yellow

Sky Blue

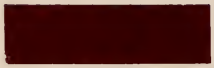


Light Sky Blue

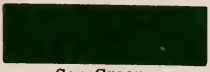


Brown No. 4 or 17

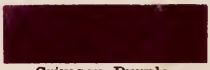
Grey No. 1, Light



Laky Red



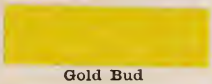
Sap Green



Crimson Purple

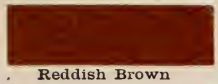
PLATE III. — GROUNDING COLORS.

Celestial Blue



Gold Bud

Turquoise Blue



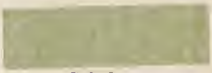
Reddish Brown

Grounding Green

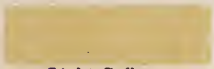
Carmelite

Lavender Blue

Rose Pompadour



Celadon



Light Coffee

Turquoise Green

Shammy Brown

Fusible Lilac

Coral Red

Steel Grey

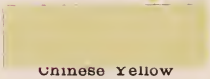
Turtle-dove Grey

Copper Water-Green

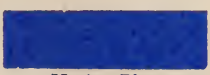
Isabella

Maize

Mauve



Chinese Yellow



Marine Blue

Salmon

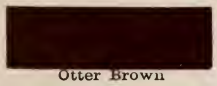
Indian Blue

Bengal Rose

Chro'm Water-Green

Permanent Yellow

PLATE IV. — PAINTING COLORS.


Otter Brown

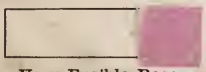
Two-Fire Blue

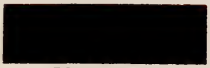
Dark Ochre

Green No. 36 T

Light Brown

Light Carmine, A

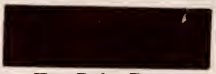

Very Fusible Rose


Black Brown

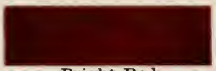
Moss Green, J

Gillyflower Brown

Chrome-Green, 3 B


Van Dyke Brown

Bronze Green


Bright Red

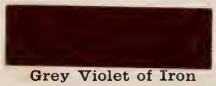
Delft Blue

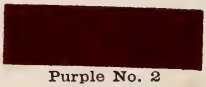
Japan Rose

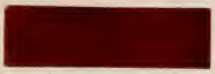
Blue No. 29

Chestnut Brown

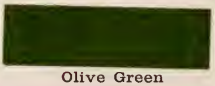
Moss Green, V

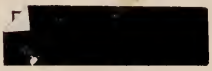

Grey Violet of Iron


Purple No. 2


Carnation, Deep

Old Rouen Blue

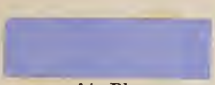

Olive Green


Duck Green

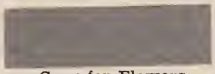
Old Blue

Chinese Rose

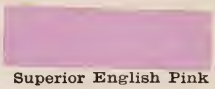
PLATE V. — NEW COLORS.



Air Blue

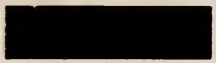


Grey for Flowers



Superior English Pink

Coalport Green, Light



Outlining Black

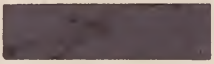
Sevres Blue

Canary Yellow

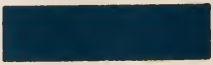
Flame Red

Albert's Yellow

Royal Copenhagen Grey

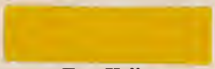


Gold Grey



Blue Green, Dark

Pansy

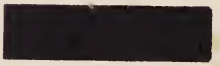


Egg Yellow

Dubarry Pink

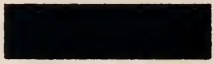
Pompadour Red No. 23

Blue-Green, Light

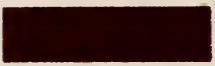


Grey for Flesh

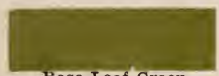
Royal Copenhagen Grey,
(WARM)



Shading Green



Maroon



Rose-Leaf Green

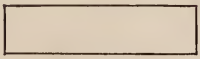
Best Orange

Coalport Green, Dark

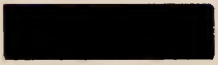
Peach Blossom

Old Holland Blue

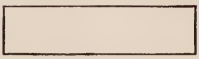
Rose



Relief White
(AUFSETZWEISS)



Brunswick Black



Relief White
(AUFSETZWEISS)

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